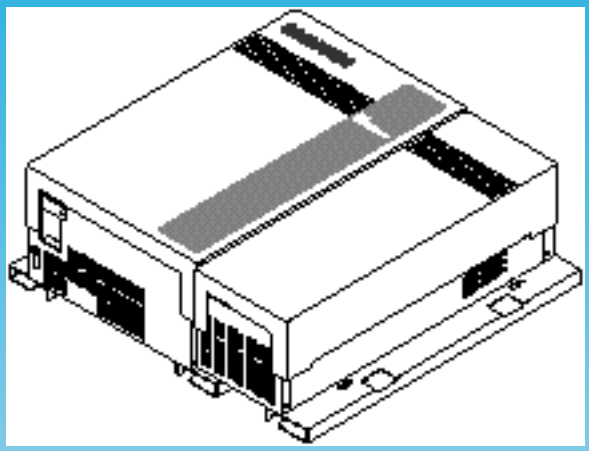
Digital Key Phone System

DCS COMPACT II
DCS COMPACT II PLUS

SERVICE Manual

Digital Key Phone System



DCS COMPACT II
DCS COMPACT II PLUS

Contents

1. System Overview

2. Circuit Description

3. IC Description & Timing

4. Digiphone Selftest & Troubleshooting

5. PBA Layout

6. Part List

7. Circuit Diagram

ELECTRONICS

© Samsung Electronics Co., Ltd
March, 1997
Printed in Korea

Chapter 1

System Overview

1-1 System Configuration 1-3
1-2 Specification 1-6
1-3 Key Service Unit Layout 1-7
1-4 Digital keyphone's Control Location 1-8
1-5 Exploded View.....1-9

1-1 System Configuration

System Specification

System Item	Specification
Processor Type	MC68EC000 16Bit Mode
Main Memory	ROM : 1M Bytes (1M Bytes) RAM : 256K Bytes (256K Bytes) ( ) : Option
Switch Structure	256°ø256 Time slot
Man-Machin Interface	MMC : RS-232C Remote MMC : Modem
ISDN Interface	S0T0/PRI
E1 Interface	E1 : 30 Channels

System Capacity

Combination of Boards	Loop Start Trunk /BRI/F	Key sets	KDB-D/ KDB-S	SLI	Max Capacity (Including KDB line)
Basic	0	8	8		0 * 8 (16)
Basic + 3TRK	3	8	8		3 * 8 (16)
Basic + 4S0T0	4(8CH)	8	8		8 * 8 (16)
Basic + 4S0T0+8DLI*2	4(8CH)	24	8		8 * 24 (32)
Basic + 3TRK*2	6	16	8		6 * 16 (24)
Basic + (4S0T0 + 8DLI*2 + EXP (4S0T0 + 8DLI*2)	8(16CH)	40	8		16 * 40
Basic + (6TRK + 8DLI*2 + EXP (6TRK + 8DLI*2)	12	40			12 * 40 (40)

°ÿIn this table, 4S0T0 is used as digital trunk.

°ÿ4S0T0 card can be used as ISDN NT. Each port can have up to 8 ISDN TEs, but power consumption of each port is limitted to 4 WATT.
Detailed description is refered to user's manual.

1-1-1 Expansion Cards

1. 3/6 TRK Card : Used to expand 3/6 C.O lines.
2. 8 DLI Card : Used to expand 8 keysets.
3. 8 SLI Card : Used to expand 8 single line telephones.
4. 4S0T0 Card : Support 4 port ISDN S0T0 interface.
5. MISC1 & MISC2 : Equipped with DTMF receiver (4CH), RS232C port (2 ports), Modem (Option), AA (Only MISC2 card).
6. E1 : Digital TRK.
7. AA : Auto Attendant Card.
8. VDIAL : Voice Dial.
9. COMPACT(Old version of COMPACTII) expansion card can be used at this system.

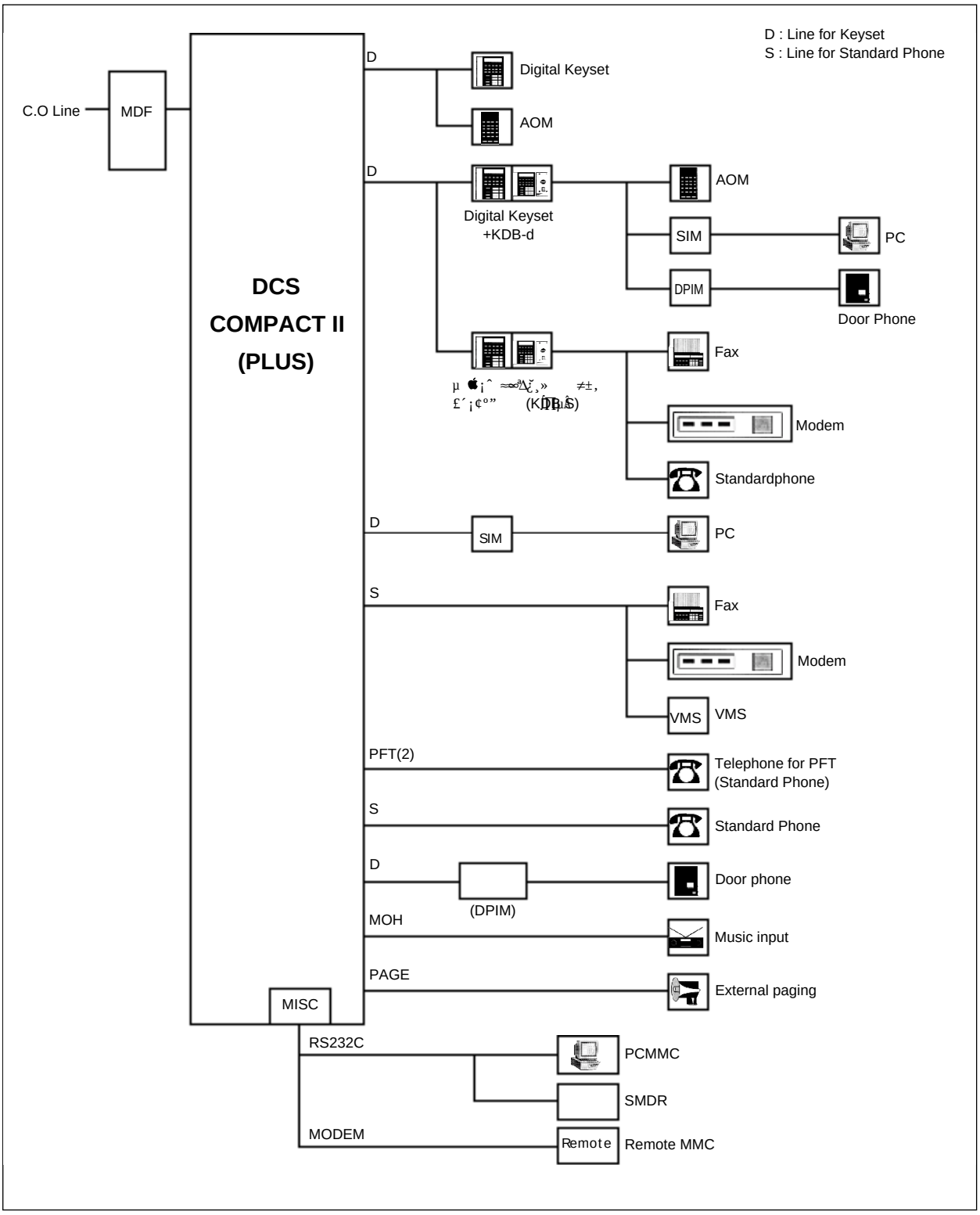
1-1-2 Station equipment

1. LCD24B : Digital Keyset equipped with LCD.
2. STD24B : Digital Keyset without LCD.
3. AOM : Add On Module.
4. 6B Basic : Basic Digital Keyset.
5. DPIM : Door Phone Interface Module
6. SIM : Serial Interface Module
7. KDB-d : Installed in a digital keyset and provide 1 port to connect any digital keyset.
8. KDB-s : Installed in a digital keyset and provide 1 port to connect any single telephone.

1-1-3 Precautions

– Install or remove the cards only when the power is OFF.
– 4 SLI, MEM, MISC should be installed into the dedicated place.
– POWER supply and MEM must be installed.

1-1-4 COMPACTII(PLUS) Commection View



1-2 Specification

1-2-1 Electrical Specification

°‹AC Input : 220V/240V

°‹Power Comsumption (Max) : 96WATTS

Sorts	Max. DC Voltage	Rating Current	Max. Current
CH1	–55.0V(±4%)	0.5A	0.7A
CH2	+5.0V(±2%)	0.8A	1.5A
CH3(BATT)	–54.0V(±4%)	0.1A	0.3A

1-2-2 Dimension and Weights

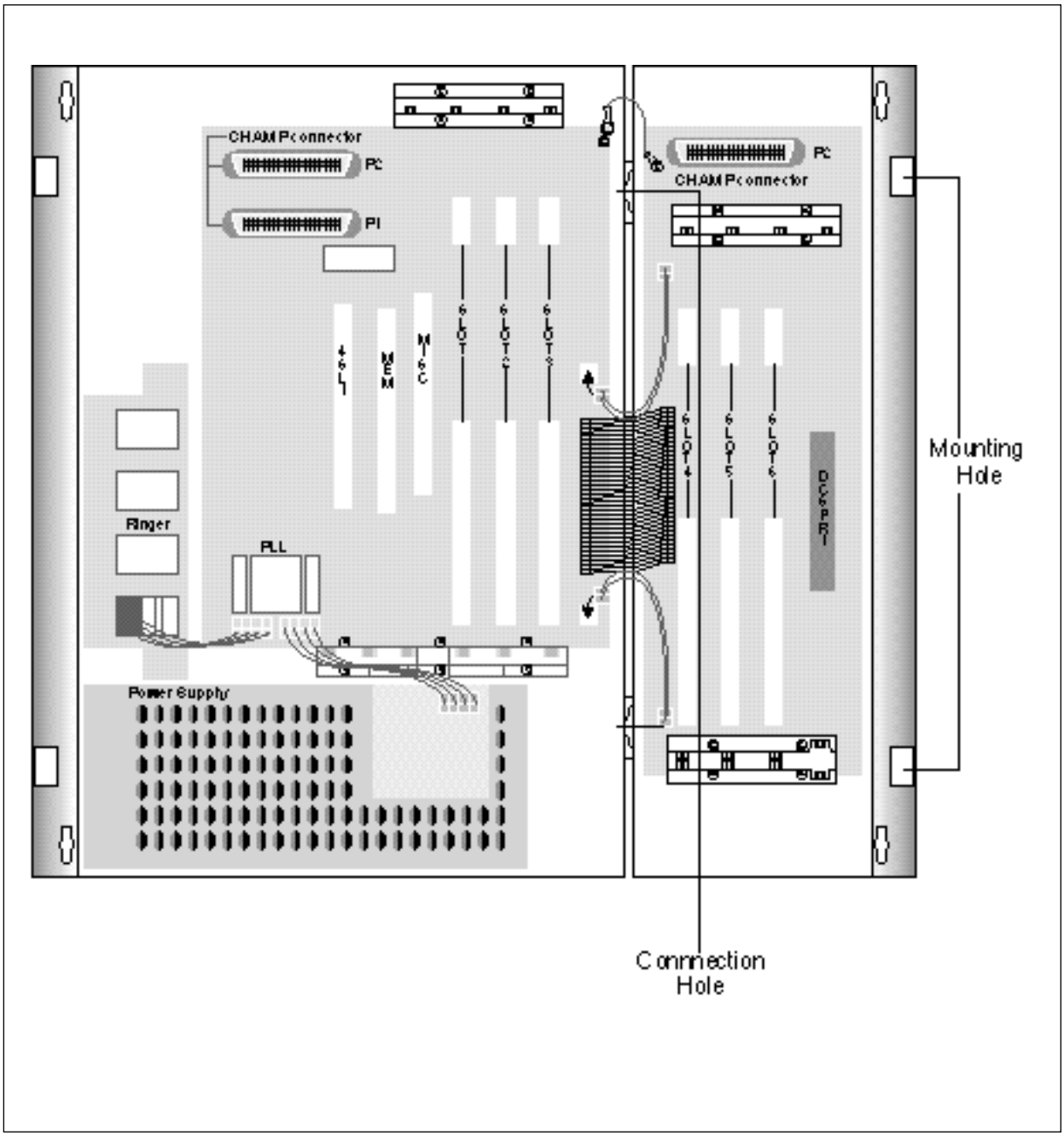
mm, kg

	Height	Width	Depth	Weight
DCS COMPACTII (plus)	464	467	148.2	12.5
DCS COMPACT II	464	315.4	148.2	7.7
LCD24B	242.6	223.4	95.2	1.01
AOM	225	107	93	0.6
DPIM	127	97	32	0.17
SIM	127	97	32	0.17

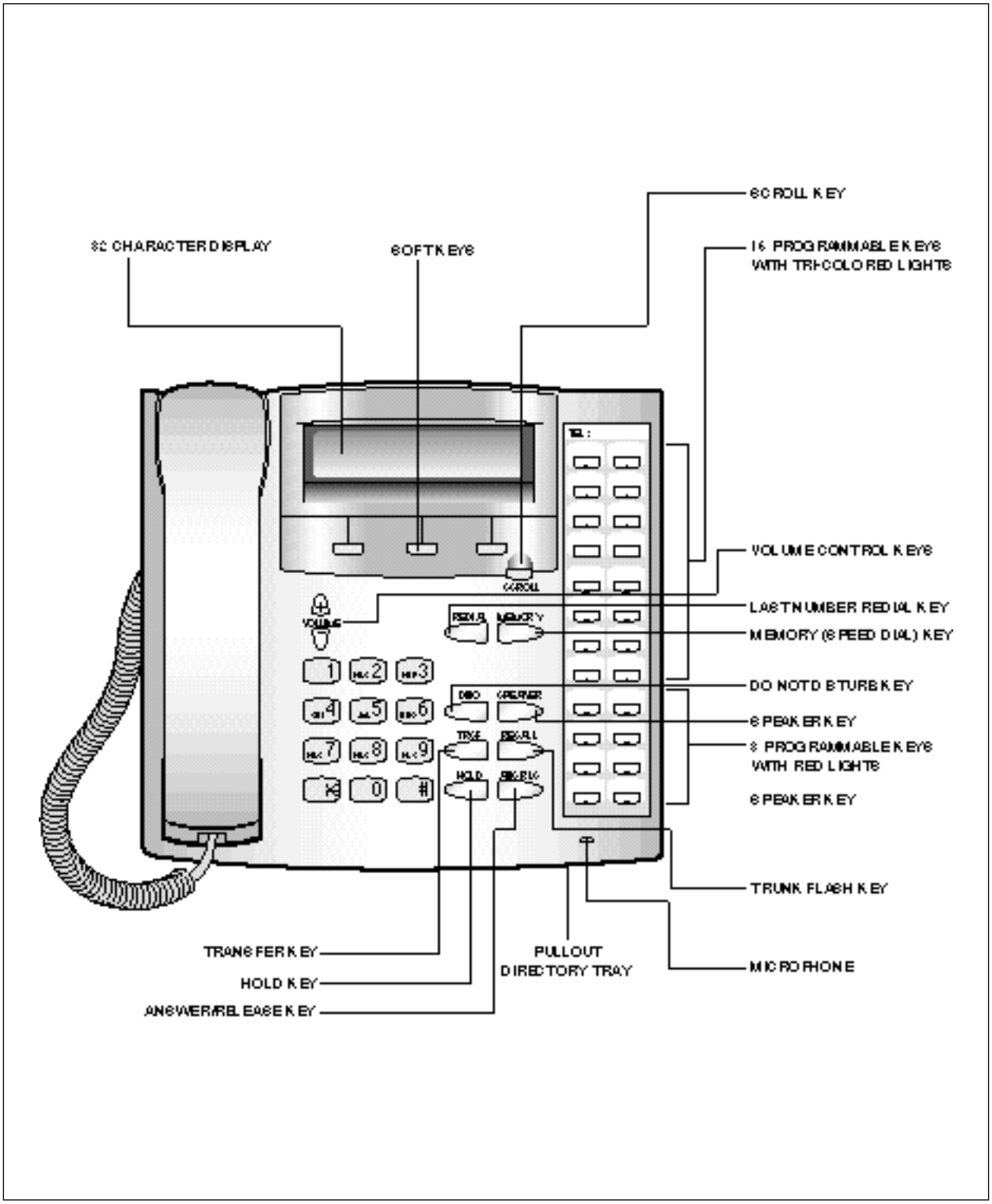
1-2-3 Environmental Limits

1. Operating Temperature : –10˚C ~ 40˚C
   Humidity : 5% ~ 95%
2. Storage Temperature : 0˚C ~ 50˚C

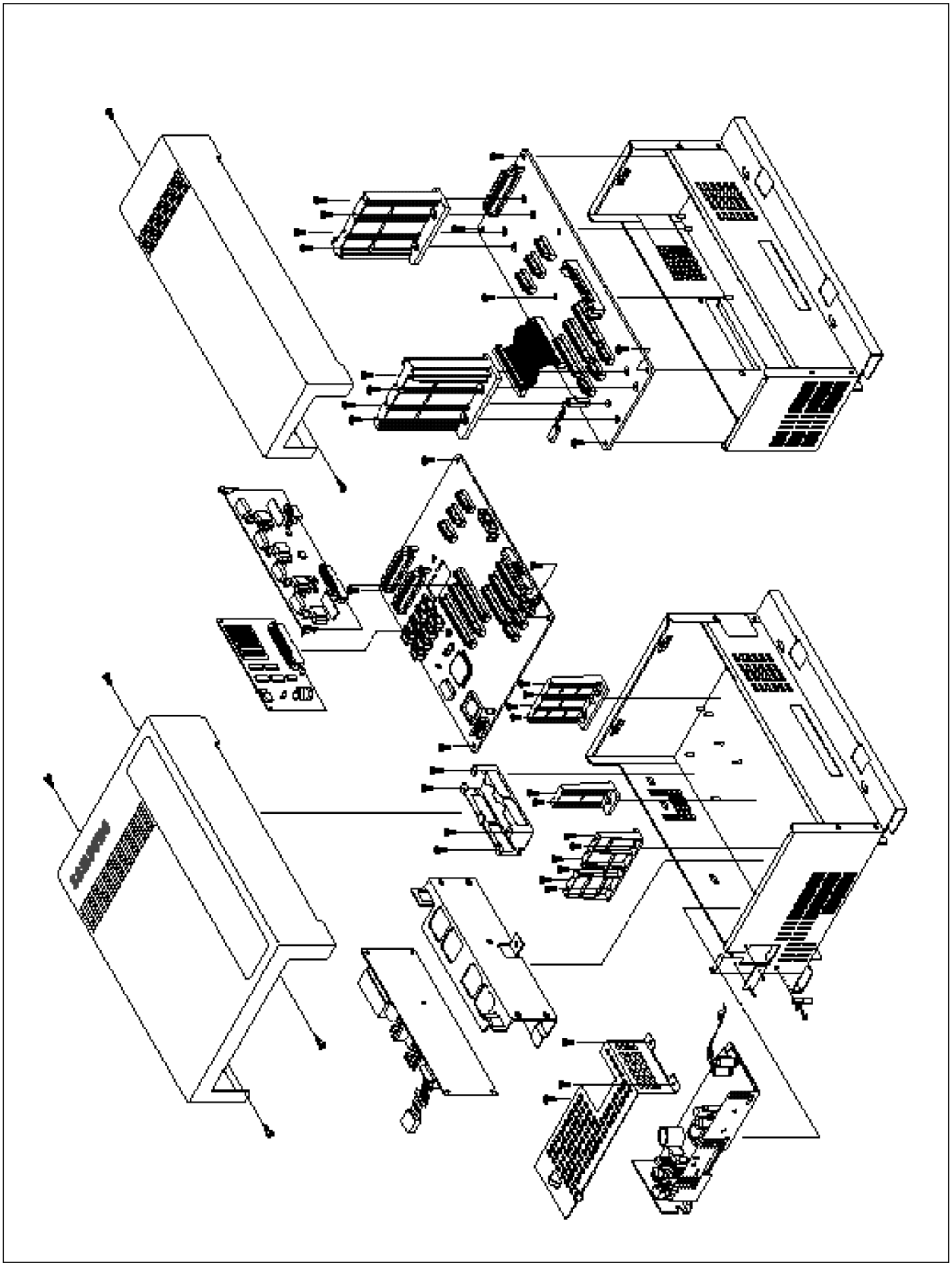
1-3 Key Service Unit Layout



1-4 Digital Keyphone's Control Location



1-5 Exploded View



Chapter 3

IC Description &

3-1 MC68EC000.....3-2

3-2 STC 9604 3-8

3-3 STL 7053 (TMC).....3-15

3-4 STI 9511 (QDMC).....3-17

3-5 TP 3404 (QDASL).....3-21

3-6 SBS 9401 3-24

3-7 CODEC (TP3057).....3-26

3-8 STL 7065.....3-28

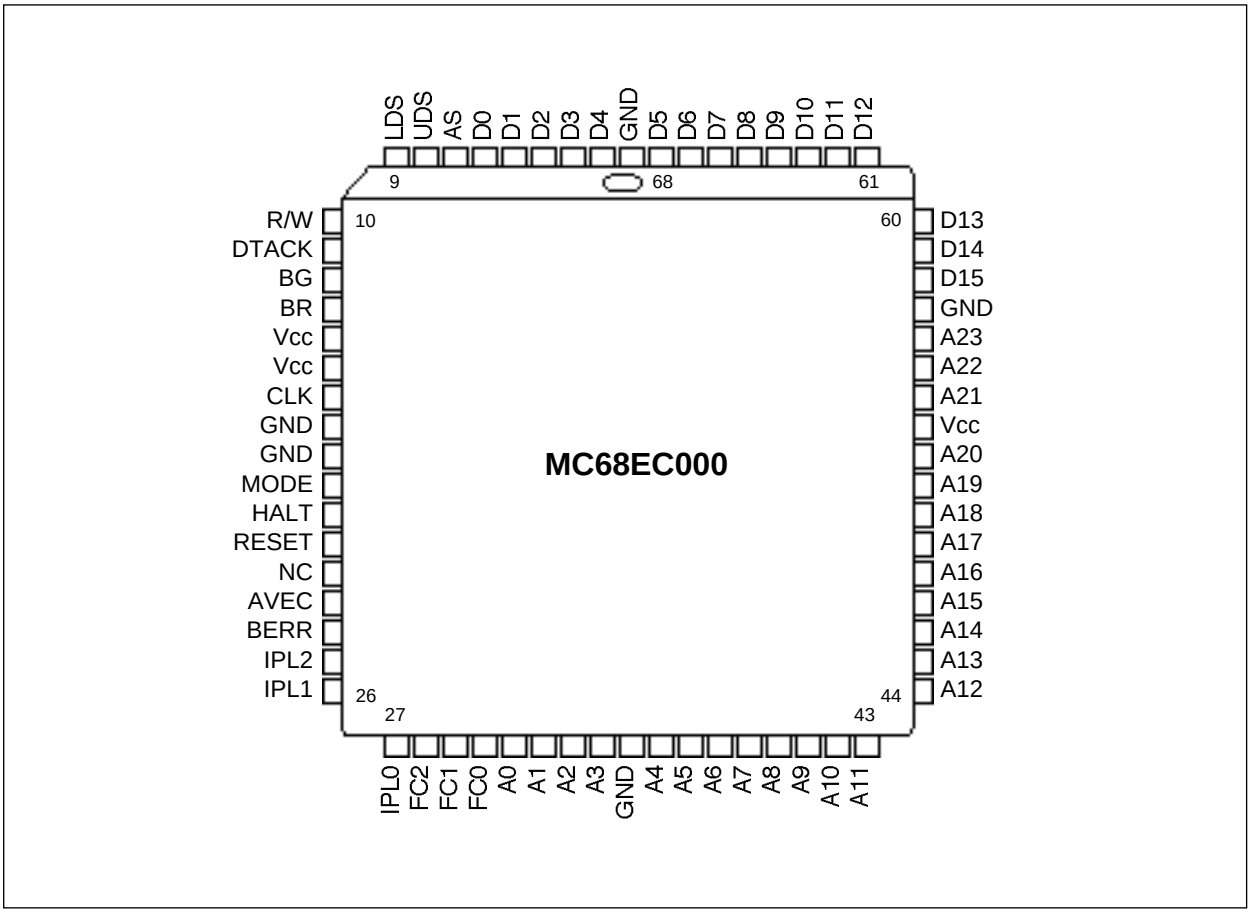
3-9 TIMING CHART.....3-29

3-1 MC68EC000

3-1-1 General

The MC68EC000 of Motolora is used as processor for DCS COMPACT II(PLUS) main system. MC68E000 is an economic version of MC68EC000. The MC68EC000 has supported by a statically selectabe 8-bit or 16-bit data bus. This architecture provides a fast and efficient processing device that can satisfy the requirements of sophisticated applications based on high-level language.

3-1-2 Pin Map



3-1-3 Circuit Description

Address Bus (A0~A23)

This 24bit, unidirectional, three-state bus is capable of addressing 16Mbytes of data. It provides the address for bus operation during all cycles except interrupt cycles. During interrupt cycles A3, A2, and A1 reflect the level of the interrupt being serviced while A23~A4 and A0 are set to a logic high.

Data Bus (D0~D15)

This 16bit bidirectional, three-state bus is the general-purpose data path. If the controller is operating in the 16bit mode, the data bus transfers and accepts data in either word or byte length. If the controller is operating in the 8 bit mode, the controller drives the entire bus during writes, but only the lower eight bits (D7~D0) contain valid data. In the 8 bit mode, the controller ignores the data on D15~D8 during read cycles. During and interrupt acknowledge cycle the external device supplies the vector number on D7~D0.

Aynchronous Bus control

Aynchronous data transfers are handled using the following control signals : address strobe, read/write, upper and lower data strobes, and data transfer acknowledge.

Address Strobe(AS)

This signal indicates a valid address on the address bus.

Read/Write (R/W)

This signal defines the data bus transfer as a read or write cycle. R/$\overline{W}$ also works in conjunction with the data strobes as explained in the following paragraph.

Upper and Lower Data Strobe ($\overline{UDS}$, $\overline{LDS}$)

These signals control the flow of data on the data bus as listed in Table. When R/$\overline{W}$ is high, the controller reads from the data bus as indicated. When R/$\overline{W}$ is Low, the controller writes to the data bus as shown. During operation in the 8 bit mode, the $\overline{UDS}$ is always forced high and $\overline{LDS}$ indicates valid data.

Data Strobe Control of Data Bus for 16 Bit Mode

UDS	LDS	R/W	D15 ~ D8	D7 ~ D0
1	1	–	No Valid Data	No Valid Data
0	0	1	Valid Data Bits 15 ~ 8	Valid Data Bits 7 ~ 0
1	0	1	No Valid Data	Valid Data Bits 7 ~ 0
0	1	1	Valid Data Bits 15 ~ 8	No Valid Data
0	0	0	Valid Data Bits 15 ~ 8	Valid Data Bits 7 ~ 0
1	0	0	Valid Data Bits 7 ~ 0	Valid Data Bits 7 ~ 0
0	1	0	Valid Data Bits 15 ~ 8	Valid Data Bits 15 ~ 8

These condition are result of current implementation and may not appear on future device.

Data Transfer Acknowledge($\overline{DTACK}$)

This input indicates that the data transfer is complete. When the controller recognizes DTACK during a read cycle, data is latched and the bus cycle is terminated. When DTACK is recognized during a write cycle the bus cycle is terminated.

Bus Arbitration Control

Bus request and bus grant form a bus arbitration circuit to determine which device will be the bus master.

Bus Request(BR)

This input indicates that an external device requires bus mastership.

Bus Grant(BG)

This output indicates to all other potential bus master devices that the controller will release bus control at the end of the current bus cycle.

Interrupt Control

The interrupt priority level signals and autovector signal are used in servicing external interrupts.

Interrupt Priority Level ($\overline{IPL2}$, $\overline{IPL1}$, $\overline{IPL0}$)

These inputs indicate the encoded priority level of the device requesting an interrupt. Level 7 is the highest priority; whereas, level 0 indicates that no interrupts are requested. Level 7 cannot be masked. The least significant bit is given in IPLO, and the most significant bit is contained in IPL2. These lines must remain stable untile the controller signals interrupt acknowledge (FC2~FC0 are all High) to ensure that the interrupt is recognized.

Autovector($\overline{AVEC}$)

This input indicates that the controller should use automatic vectoring for an interrupt during an interrupt acknowledge cycle.

NOTE : $\overline{AVEC}$ should be asserted only during an interrupt acknowledge cycle, or erratic controller operation could occur.

System Control

The four system control inputs are used to reset or halt the controller, to indicate that the controller state bus errors have occurred, and to switch from 8 bit to 16 bit operating mode.

Reset ($\overline{\text{RESET}}$)

The bidirectional signal resets (starts a system initialization sequence)the MC68EC000 in response to an external $\overline{\text{RESET}}$ signal. An internally generated reset (result of a $\overline{\text{RESET}}$ instruction) causes all external devices to be reset, and the internal state of the controller is not affected A total system reset (controller and external devices) is the result of external $\overline{\text{HALT}}$ and $\overline{\text{RESET}}$ signals applied simultaneously.

Halt($\overline{\text{HALT}}$)

When this bidirectional line is driven by an external device, it causes the controller to stop at the completion of the current bus cycle. When the controller has been halted using this input, all control signals are inactive, and all three-state lines are put in their high-inpedance state.
When the controller stop executing instructions, such as in a double bus fault condition, the $\overline{\text{HALT}}$ line is driven by the controller to indicate to external devices that the controller has stopped.

Bus Error ($\overline{\text{BERR}}$)

This input informs the controller that there is a problem with the bus cycle currently being executed.
Problems may be a result of:
°‹Nonresponding devices,
°‹Interrupt vector number acquisition failure,
°‹Illegal access request as determined by a memory management unit, or
°‹Other application-dependent errors.
The bus error signal interacts with the halt signal to determine if the current bus cycle should be reexecuted or if exception processing should be performed.

Mode (MODE)

The MODE input selects between the 8 bit and 16 bit operating modes. If this input is grounded at reset, the controller will come out of reset in the 8 bit mode. If this input is tied high or floating at reset, the controller will come out of reset in the 16 bit mode. This input should be changed only at reset and must be stable two clocks after RESET in negated. Changing this input during normal operation may produce unpredictable results.

Processor Status (FC2, FC1, FC0)

These function code outputs indicate the state (user or supervisor) and the cycle type currently being executed. The information indicated by the function code outputs is valid whenever address strobe (AS) is active.

Function Code Outputs

Function Code Output			Cycle Time
FC2	FC1	FC0	
0	0	0	(Undefined, Reserved)
0	0	1	User Data
0	1	0	User Program
0	1	1	(Undefined, Reserved)
1	0	0	(Undefined, Reserved)
1	0	1	Supervisor Data
1	1	0	Supervisor Program
1	1	1	Interrupt Acknowledge

Clock (CLK)

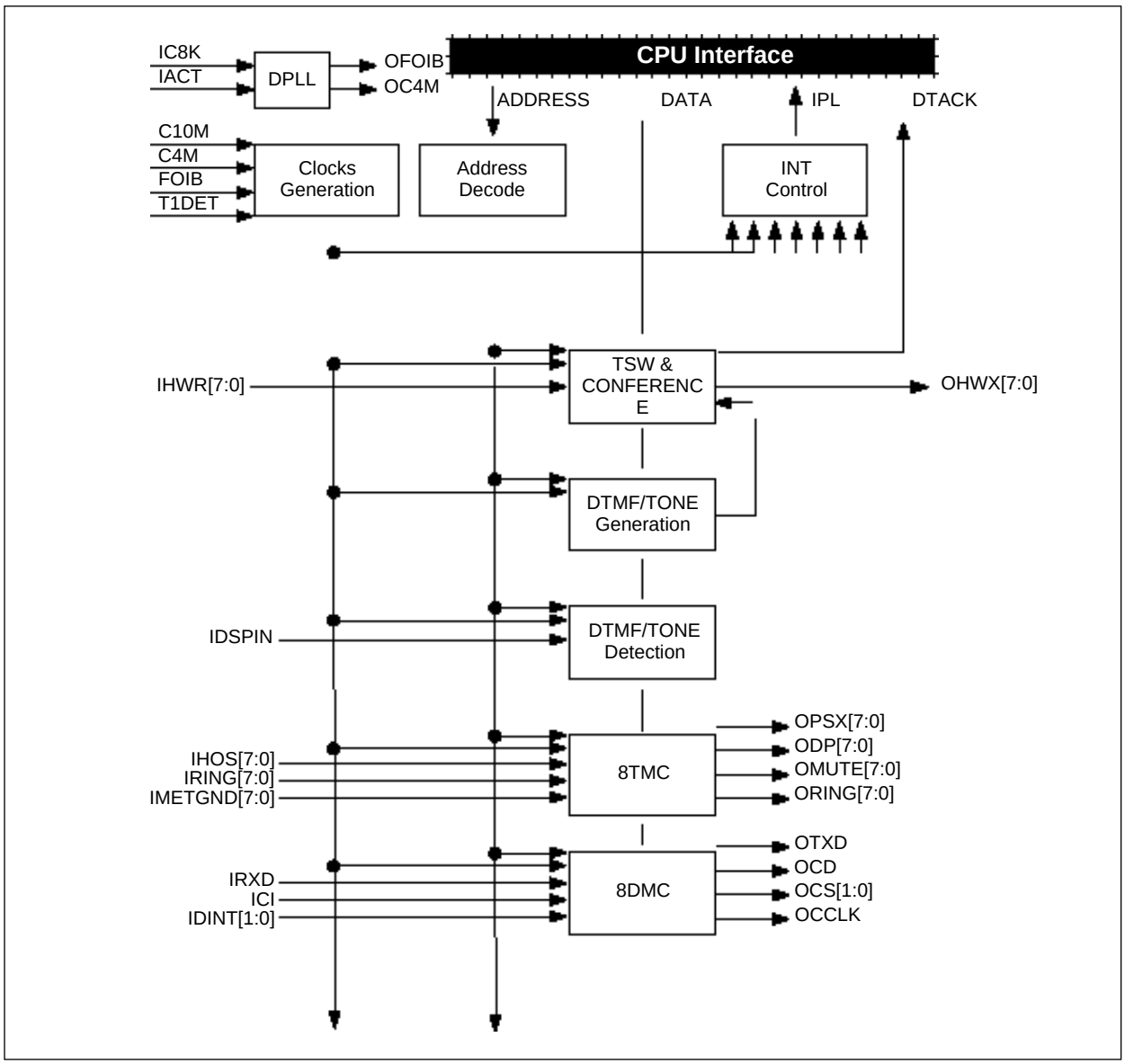
The clock input is a TTL-compatible signal that is internally buffered for development of the internal clock needed by the controller, The clock input should not be gated off at any time. and the clock signal must conform of minimum and maximum pulse-width times. The clock is a constant-frequency square wave with no stretching or shaping techniques required.

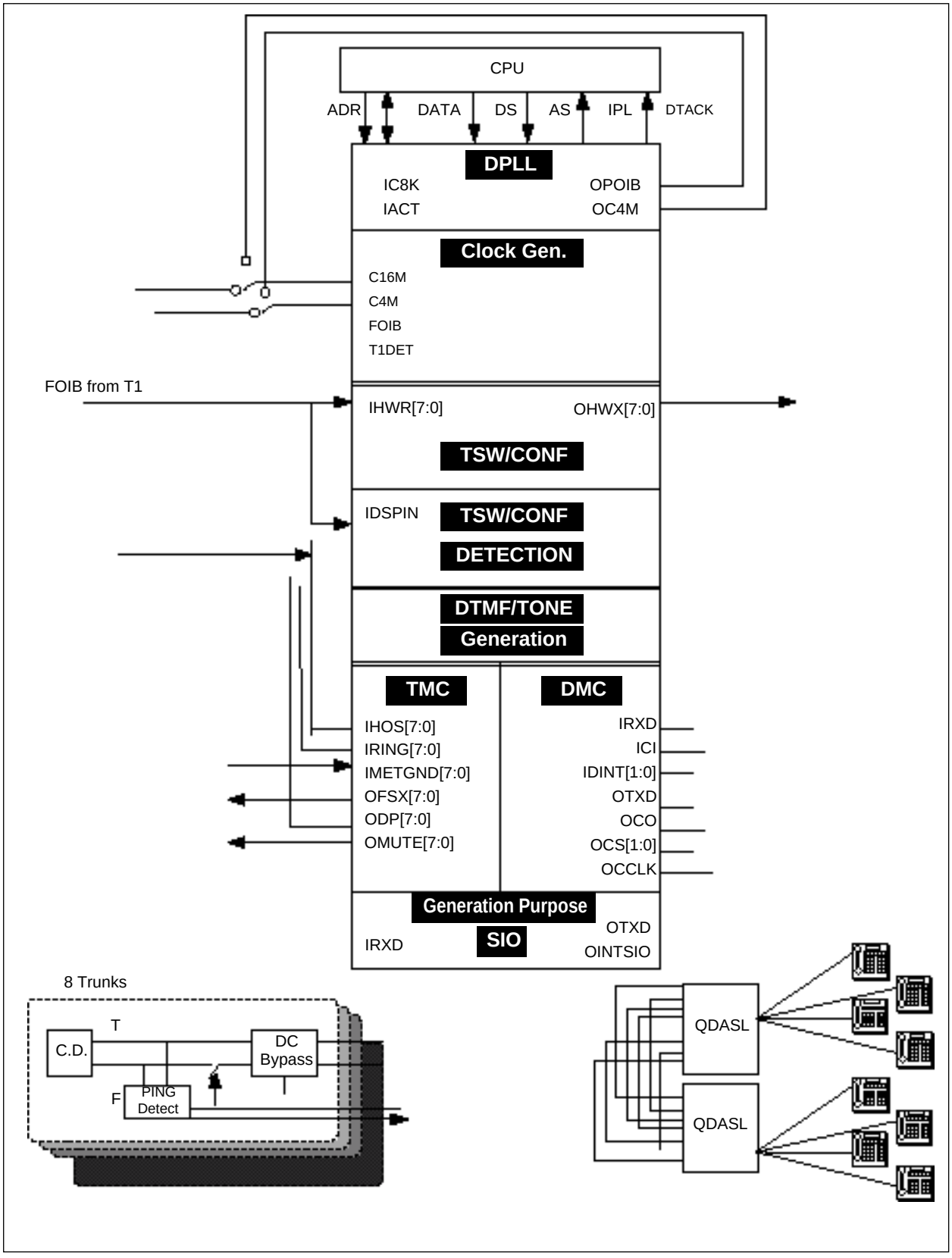
3-2 STC-9604

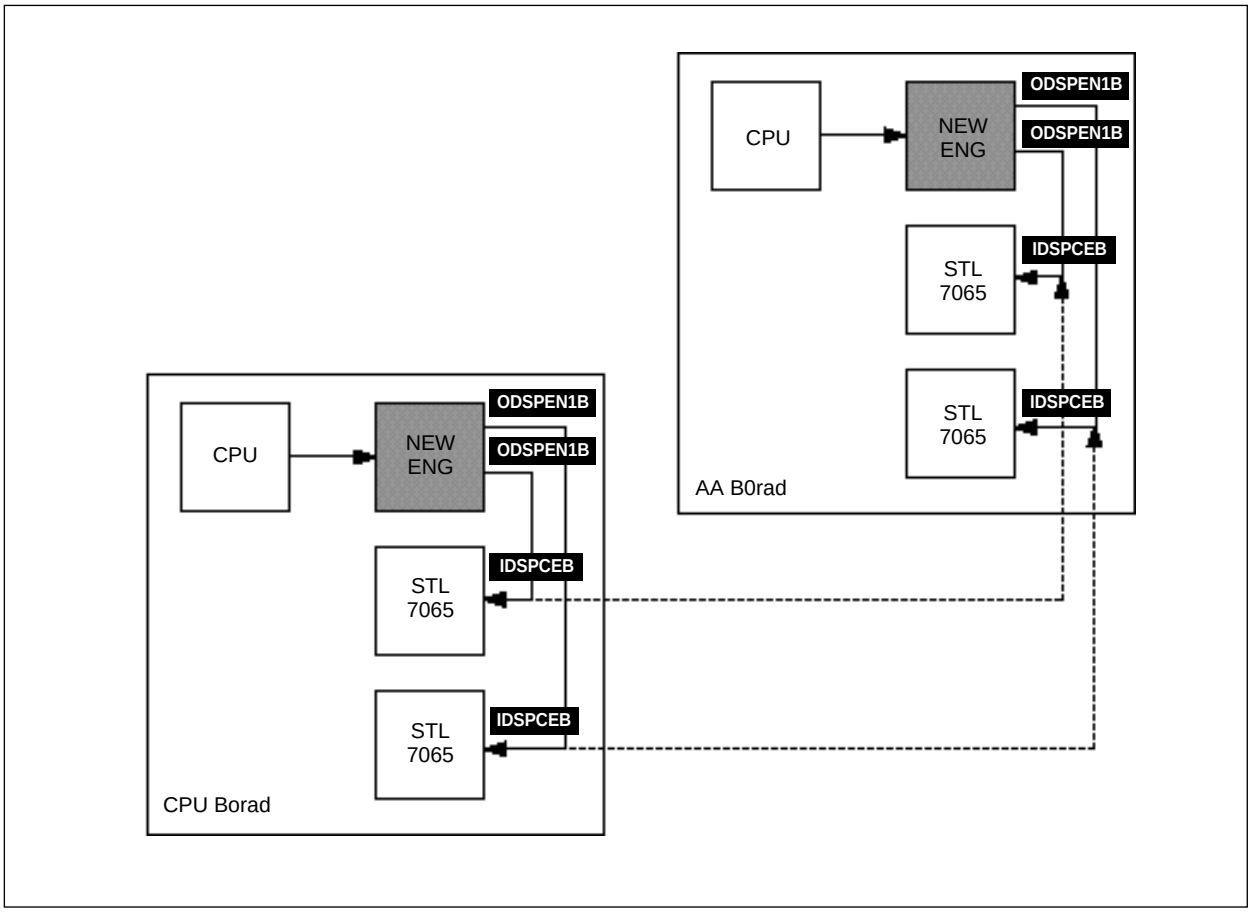
3-2-1 GENERAL

STL-9604 is ASIC which performs various functions. It controls main system. Included are DPLL, Clock Generation, Time Switch, Digital Conference, Multi-Tone/DTMF Detector, QDASL Control, TMC control.

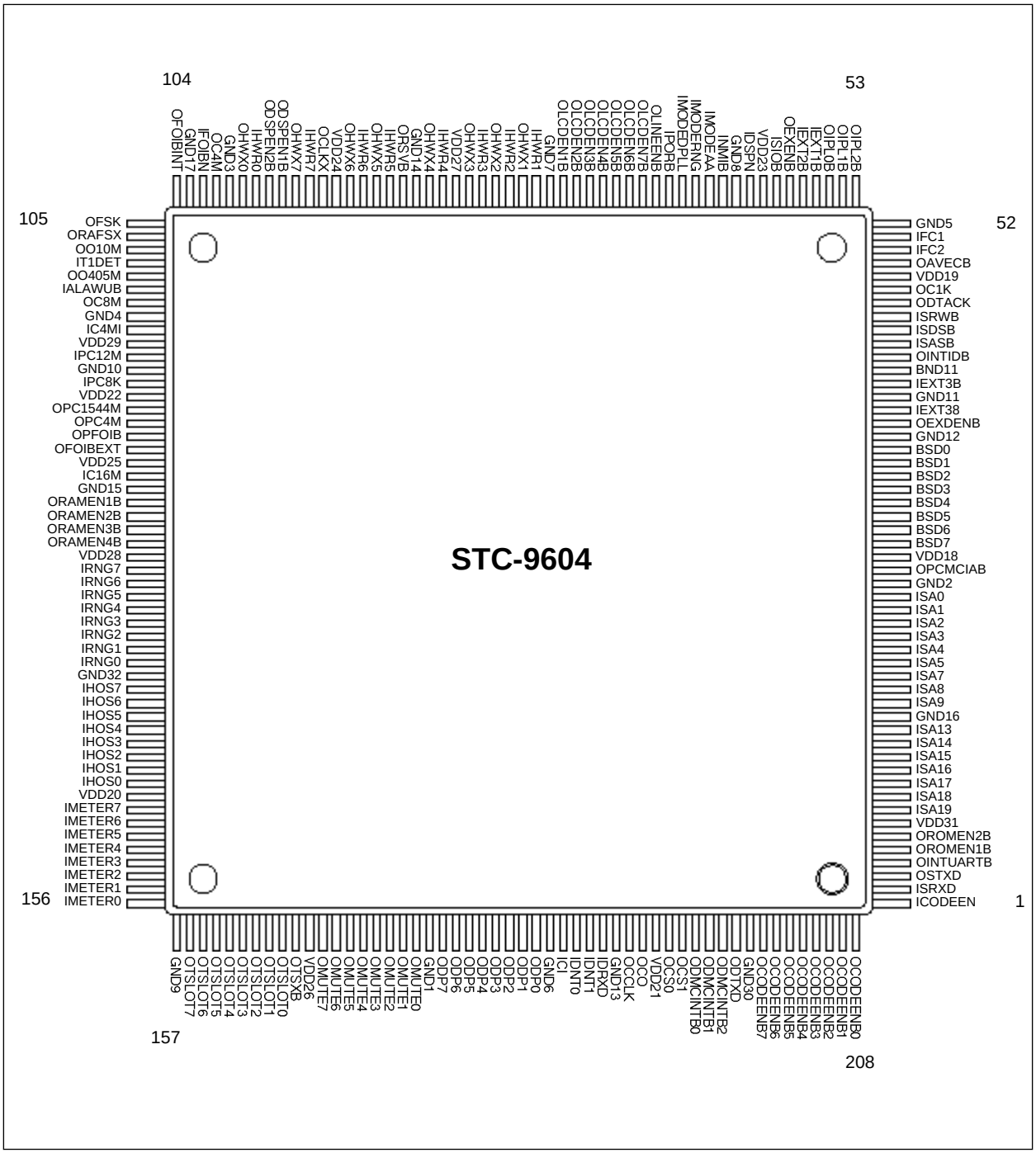
3-2-2 Block Diagram




CPU
ADR
DATA
DS
AS
IPL
DTACK
DPLL
IC8K
IACT
OPOIB
OC4M
Clock Gen.
C16M
C4M
FOIB
T1DET
FOIB from T1
IHWR[7:0]
OHWX[7:0]
TSW/CONF
IDSPIN
TSW/CONF
DETECTION
DTMF/TONE
Generation
TMC
DMC
IHOS[7:0]
IRING[7:0]
IMETGND[7:0]
OFSX[7:0]
ODP[7:0]
OMUTE[7:0]
IRXD
ICI
IDINT[1:0]
OTXD
OCO
OCS[1:0]
OCCLK
Generation Purpose
SIO
IRXD
OTXD
OINTSIO
8 Trunks
T
C.D.
DC
Bypass
F
PING
Detect
QDASL
QDASL


CPU
NEW ENG
ODSPEN1B
ODSPEN1B
STL 7065
IDSPCEB
STL 7065
IDSPCEB
AA B0rad
CPU
NEW ENG
ODSPEN1B
ODSPEN1B
STL 7065
IDSPCEB
STL 7065
IDSPCEB
CPU Borad

3-2-3 Pin Map


104
53
105
52
156
1
157
208
STC-9604
OFOIBINT
GND17
IFOIBN
OC4M
GND3
OHWX0
IHWR0
ODSPEN2B
ODSPEN1B
OHWX7
IHWR7
OCLKX
VDD24
OHWX6
IHWR6
OHWX5
IHWR5
OPSVB
GND14
OHWX4
IHWR4
VDD27
OHWX3
IHWR3
OHWX2
IHWR2
OHWX1
IHWR1
GND7
OLCDEN1B
OLCDEN2B
OLCDEN3B
OLCDEN4B
OLCDEN5B
OLCDEN6B
OLCDEN7B
OLINEENB
IPORB
IMODEDPLL
IMODERNG
IMODEAA
INMIB
GND8
IDSPN
VDD23
ISIOB
OEXENB
IEXT2B
IEXT1B
OIPL0B
OIPL1B
OIPL2B
OFSK
ORAFSX
OO10M
IT1DET
OO405M
IALAWUB
OC8M
GND4
IC4MI
VDD29
IPC12M
GND10
IPC8K
VDD22
OPC1544M
OPC4M
OPFOIB
OFOIBEXT
VDD25
IC16M
GND15
ORAMEN1B
ORAMEN2B
ORAMEN3B
ORAMEN4B
VDD28
IRNG7
IRNG6
IRNG5
IRNG4
IRNG3
IRNG2
IRNG1
IRNG0
GND32
IHOS7
IHOS6
IHOS5
IHOS4
IHOS3
IHOS2
IHOS1
IHOS0
VDD20
IMETER7
IMETER6
IMETER5
IMETER4
IMETER3
IMETER2
IMETER1
IMETER0
GND5
IFC1
IFC2
OAVECB
VDD19
OC1K
ODTACK
ISRWB
ISDSB
ISASB
OINTIDB
BND11
IEXT3B
GND11
IEXT38
OEXDENB
GND12
BSD0
BSD1
BSD2
BSD3
BSD4
BSD5
BSD6
BSD7
VDD18
OPCMCIAB
GND2
ISA0
ISA1
ISA2
ISA3
ISA4
ISA5
ISA7
ISA8
ISA9
GND16
ISA13
ISA14
ISA15
ISA16
ISA17
ISA18
ISA19
VDD31
OROMEN2B
OROMEN1B
OINTUARTB
OSTXD
ISRXD
ICODEEN
GND9
OTSLOT7
OTSLOT6
OTSLOT5
OTSLOT4
OTSLOT3
OTSLOT2
OTSLOT1
OTSLOT0
OTSXB
VDD26
OMUTE7
OMUTE6
OMUTE5
OMUTE4
OMUTE3
OMUTE2
OMUTE1
OMUTE0
GND1
ODP7
ODP6
ODP5
ODP4
ODP3
ODP2
ODP1
ODP0
GND6
ICI
IDNT0
IDNT1
IDRXD
GND13
OCCLK
OCCO
VDD21
OCS0
OCS1
ODMCINTB0
ODMCINTB1
ODMCINTB2
ODTXD
GND30
OCODEENB7
OCODEENB6
OCODEENB5
OCODEENB4
OCODEENB3
OCODEENB2
OCODEENB1
OCODEENB0

3-2-4 Feature Description

Time switch

°‹Performs switching on 8 highways 256channels.
°‹Switching configuration is achieved by writing channel address into the switching address field (low byte) in control memory.
°‹It is possible to control memory each channel's high impedance state for 8 output highway.
°‹8 step gain control (2.8 to – 6dB)

Digital Conference

°‹Provides 5 way 6 group conference.
°‹Up to 6 of 256 channels can be assigned to conference member.
°‹Conference member assignment is achieved by writing the group ID to the relevant conference group fields of the selected channel contrl memory.
°‹It is possible to control each channel's noise suppression.
°‹8 step gain control (2.8 to - 6dB) for added speech.
°‹It is possible to show that overflow occur during conference.
°‹It is possible to mask specific conference group member channel output.

QDASL CONTROL

°‹Control 2 Quad-DASL Chip (TP3404) made by National Semiconductor.
°‹It is possible to TX/RX data with URAT for D chnnel.
°‹Programmable UART speeds (2K/4K/8K/16Kbps)
°‹B channel can do bypass matching.
°‹Microwried serial controll (16bit) matching.

TMC CONTROL

°‹Dial Pulse Generator
°‹Time Slot Generator
°‹Input detector & Output port control
°‹Each 8 ports

COMMON

°‹Support A-law/μ-law PCM
°‹Speech memory read
°‹Control memory read/write
°‹It is possible to control Tone data output with CMH(contrl memory high byte) D7 bit.
°‹Conference Control Register Read/Write
°‹Overflow Status Register Read
°‹It is possible to control High impedance state of highway output pin.
°‹Signalling Memory Read Enable
°‹Control Memory Read Enable

S/W Control Procedure

Power on Reset

All output highway are forced high impedance status by setting the highway output control register.

Control Memory Initialize

It is necessary to be initialized by CPU, because the control memory is not initialized with Reset feature. Especially, high byte of conference group must be initialized to be no conference(111or 110).

CML(Address 40200H~402FFH) : Channel address write
CML(Address 40300H~403FFF) : 70H write

Highway Output Control Register Clear

Output highway is enabled by writing 00H

Control Memory Write

- Write each channel's address into the control memory low byte of two channels that is connected. For example, if you want to connect 0 highway 3 channel address 03H and 3 highway 7 channel address 67H together, write 67H into 44003H address and 03H into 44067H address to connect both of them.
- Write a proper value the control memory high byte according to the connected cahnnel attributes.

Conference Configuration

- Assign the noise reduction mode by setting the conference channel mask bit of the relevant group conference control register to ON.
- Write its own channel address to the control memory low byte of conference member.
- Write conference group/gain control mode into the control memory high byte.
- After 2 frames, overflow can be checked during conference. Adjust the gain control mode of control memory high byte if necessary.

Overflow status check

- It is possible to check overlfow during conference and adjust gain control mode of control memory high byte, if neccesary, with reading 42006H.

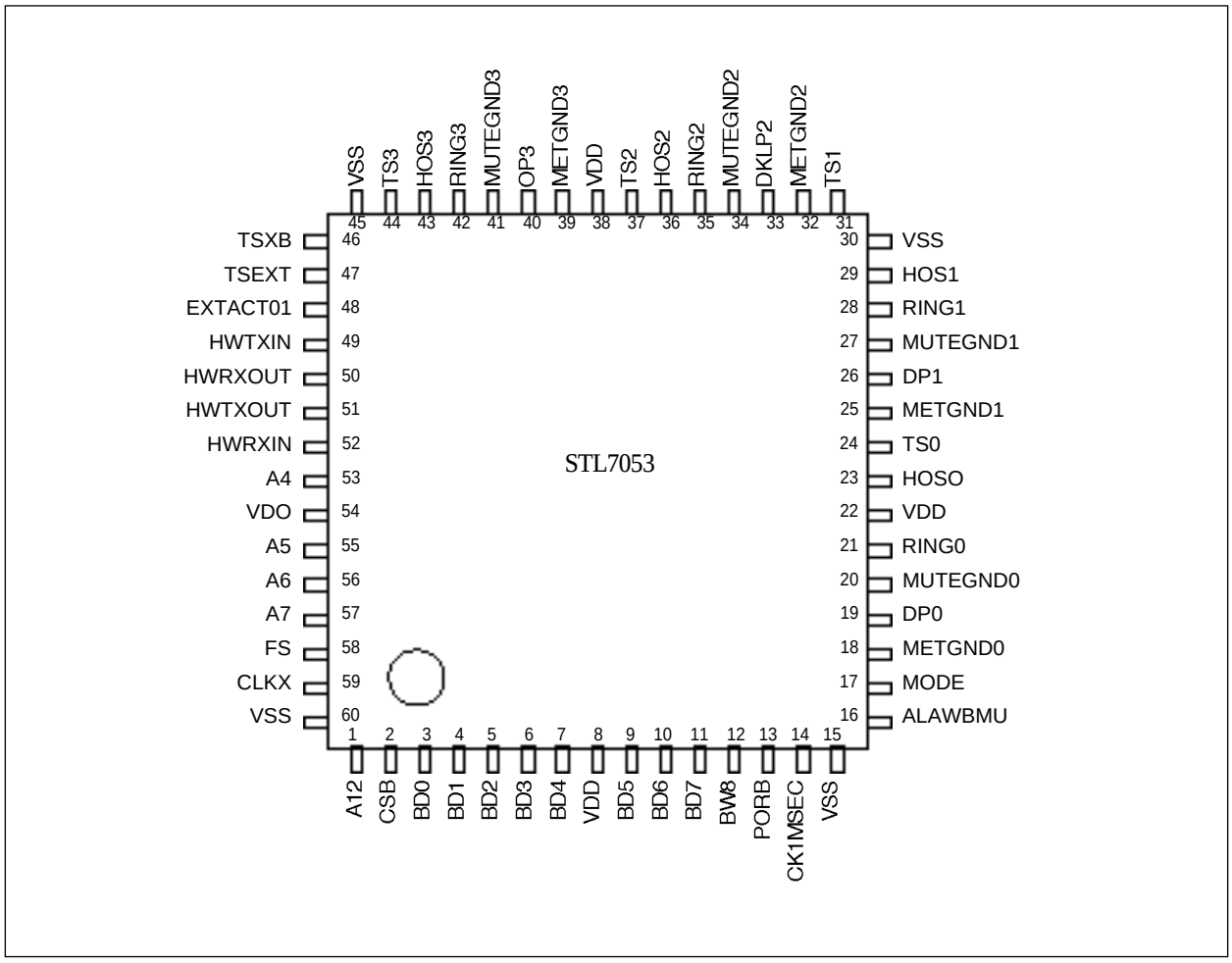
3-3 STL 7053 (TMC)

3-3-1 General

Controller IC STL7053 (TMC : Trunk Module Controller) consists of Dial pulse generator, Channel assign generator, Relay control, and the other logics.

The dial pulse can be selected between 50mSec and 100mSec cycles, and the channel assign generator section supports up to 5 ports and each channel assign signal has timing which supports CODEC (specially, TP3057).

3-3-2 Pin Map



3-3-3 Function Module Map

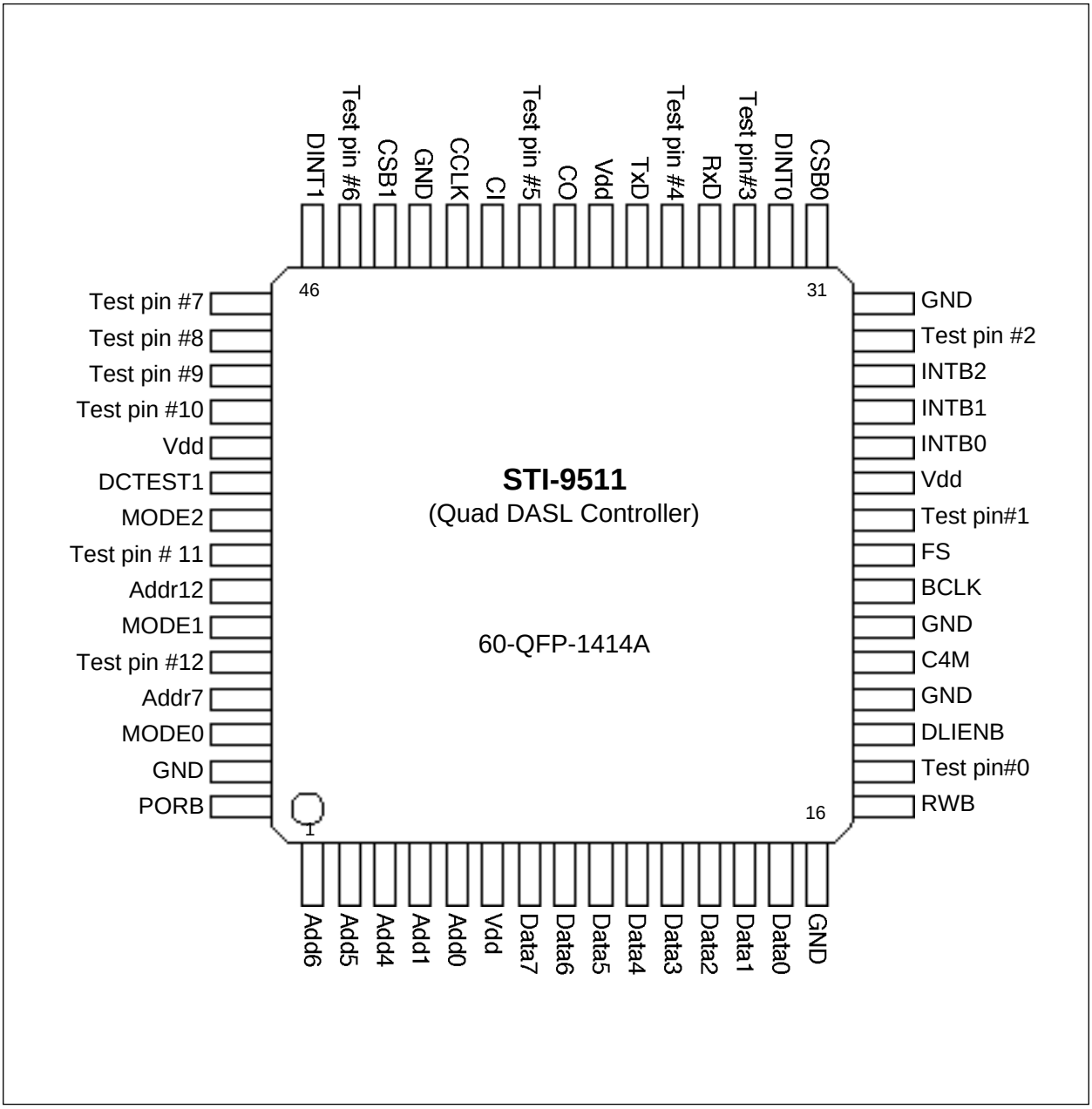
Mode	Address					READ DATA					Write Data				
	A12	A7	A6	A5	A5	D7-D4	D3	D2	D1	D0					
0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 1 1	0 1 0 1	X	METER or GND	X	RING	HOS	X	METER or GND	LOOP #2	LOOP #1	Dial Number (1-A)
1	0 0 0 0	0 0 0 0	1 1 1 1	0 0 1 1	0 1 0 1	X									
0	1 1 1 1	0 0 0 0	0 0 0 0	0 0 1 1	0 1 0 1	0	0 (card ID)	0 X	0 All 0°s	1	ENABLE	Gain Contor1	Time Slot Assign		
1	1 1 1 1	0 0 0 0	1 1 1 1	0 0 1 1	0 1 0 1	X All 0°s									
0	0 0 0 0	1 1 1 1	0 0 0 0	0 0 1 1	0 1 0 1	Dial pulse read					EXTAT01 → D0; D7: 100msec/50msec Dial pulse Write				
1	0 0 0 0	1 1 1 1	1 1 1 1	0 0 1 1	0 1 0 1	Dial pulse read					EXTAT01 → D0; D7: 100msec/50msec Dial pulse Write				
0	1	1	0	0	0	X					Enable	X	Ext Time slot		
1	1	1	1	0	0	X						X	Ext Time slot		

3-4 STI-9511 (QDMC)

3-4-1 General

DLI module control STI-9511 performs signalling control, channel assigning, and QDASL (TP3404) control between the main system and digital telephone.

3-4-2 Pin Map



3-4-3 Funtional Description

Chip

Expansion

The chip expansion is determined by input pin. Up to 4 chip can be used for one board. Input pin & ID value is as follows.

Mode#1 Pin#55	Add#12 Pin#54	Mode#0 Pin#58	Add#7 Pin#57	Card & Chip ID value
0	0	0	0	Chip#0:Card ID(07£‹h) Chip ID(01£‹h)
0	1	0	1	Chip#1:Card ID(07£‹h) Chip ID(02£‹h)
1	0	1	0	Chip#2:Card ID(07£‹h) Chip ID(03£‹h)
1	1	1	1	Chip#3:Card ID(07£‹h) Chip ID(04£‹h)
The rests of Decodings				Card ID or Chip ID value can°Ø readable(00£‹h)

D7	D6	D5	D4	D3	D2	D1	D0
S/W Reset	Speed sel #1	Speed sel #0	X	X	MASK Tx	MASK Rx	MASK DASL

Bit allocation table of Mode setting Register

– D7 Bit : software Reset

– D6, D5 Bit : UART speed

Speed (D6)	Speed (D5)	Comments
0	0	2Kbps(Speed of D-ch Transceiver)
0	1	4Kbps(Speed of D-ch Transceiver)
1	0	8Kbps(Speed of D-ch Transceiver)
1	1	16Kbps(Speed of D-ch Transceiver)

– D4, D3 Bit : Don’t care

– D2, D1, D0 Bit : Interrupt Masking Bit

UART

UART performs data signalling. It transmits the values written into a register by the processor, in accordance with the transmission speed as the serial data stream of TxD. It converts RxD (serial input data stream) to parallel and stores into a data buffer to be read by the processor. The main purpose is to be signalling by forming the D-channel data stream with the interface with DASL chip.

D7	D6	D5	D4	D3	D2	D1	D0
X	Speed sel #1	Speed sel #0	Parity Error	Tx Full	Tx Empty	Rx Full	Rx Empty

UART Status Register

When status change occurs, the register is active high. The bit of assigned order is as follows.
D4 : Parity Error (High if error occurs after checking even parity)
D3 : Tx full (High if 3 byte exist in Tx buffer)
D2 : Tx Empty (High if the data to be transmitted does not exist in Tx buffer).
D1 : Rx full (High if 3 byte exist in Rx buffer)
D0 : Rx Empty (If the data received does not exist in Rx buffer)

Interrupt structure

– INTRD0 (Pin#26 : UART Rx Interrupt Read)

D7	D6	D5	D4	D3	D2	D1	D0
INT Rx Port #7	INT Rx Port #6	INT Rx Port #5	INT Rx Port #4	INT Rx Port #3	INT Rx Port #2	INT Rx Port #1	INT Rx Port #0

– INTRD1 (Pin#27 : UART Tx Interrupt Read)

D7	D6	D5	D4	D3	D2	D1	D0
INT Tx Port #7	INT Tx Port #6	INT Tx Port #5	INT Tx Port #4	INT Tx Port #3	INT Tx Port #2	INT Tx Port #1	INT Tx Port #0

– INTRD2 (Pin#28 : External Interrupt Read)
Occur interrupt with receiving signal from TP3404.

B-Channel Interface

STI-9511 concerned with B-channel controls Tx/Rx time slot allocation through Microwired interface.

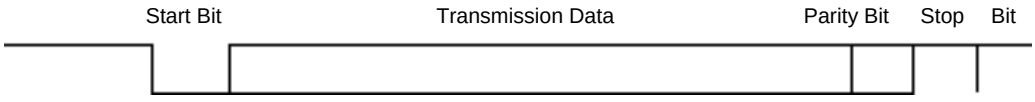
Microwired Interface

To control 2 TP3404, the output of STI-9511 (CO(Pin#38), CCLK(Pin#41), CSB0(Pin#31), CSB1(Pin$43)) is connected to input of TP3404's Microwired Interface (CI(Pin#21), CCLK(Pin#19), CSB(Pin#18, 1st TP3404), CSB(Pin#18, 2nd TP3404)), and input of STI-9511 (CI(Pin#40) is connected to CO (Pin#20) of TP3404. As this method, Microwired Interface (serial interface) can realize. Microwired interface of TP-3404 is changed to 16bit from 8bit. There are chip enable register, address register, data register to controls 2 TP3404 with 1 STI-9511.

D1 Bit	D0 Bit	Comment
0	0	Assign to Sub-time slot this chip
0	1	1st TP3404 Microwired Enable(Active "Low")
1	0	2nd TP3404 Microwired Enable(Active "Low")

D-channel Interface

Two signal is needed to Tx/Rx D-channel's data to TP3404 with Serial Data Stream.
RxD (Pin#34) transfers data of D-channel from TP3404 to Processor, and TxD (Pin#36) is vice versa. UART format for D-channel interface is as follows.



Start Bit(1Bit : Low)+Transmission Data(8Bit)+Praity Bit(Even)+Stop Bit(1Bit :High)

3-5 TP3404 (QDASL)

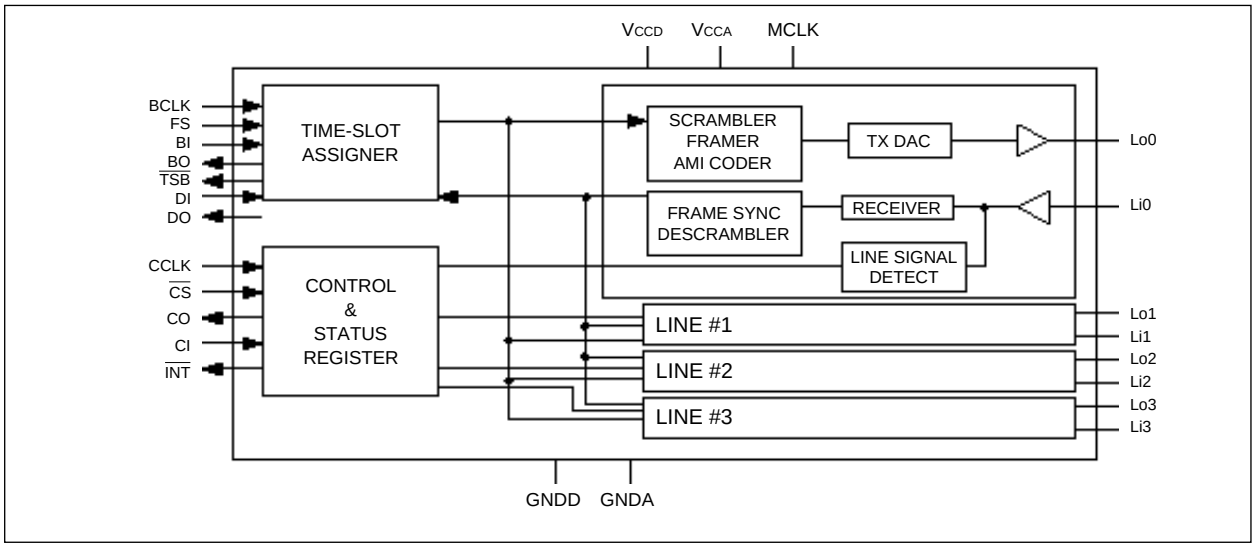
3-5-1 General Description

The TP3404 is a combination 4-line transceiver for voice and data transmission on twisted pair subscriber loops, typically in line card interface. It is companion device to the TP3401/2/3 DASL single-channel transceivers. In addition to 4 independent transceivers, a time-slot assignment circuit is included to support interfacing to the system backplane. Each QDASL line operates as an ISDN “U” Interface for short loop applications, typically in a PBX evnironment, providing transmission for 2B channels and 1D channel. Full-deplex transmission at 144kbps is achieved on single twisted wire pairs using a burst-mode technic (Time Compression multiplexed). Alternate mark Inversion (AMI) line coding is used to ensure low error rates in the presence of noise with lower EMI radiation than other codes such as Biphase manchester).

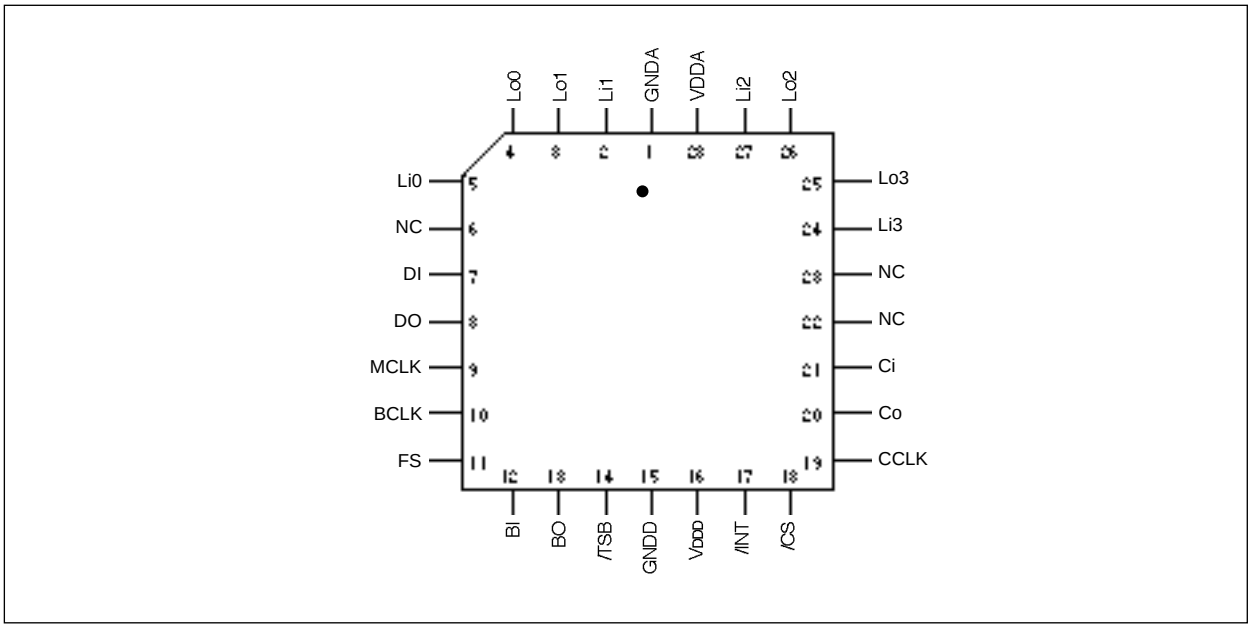
3-5-2 Features

– Quad 2B plus D channel interface for PBX “U” interface.
– 144kbps full-duplex on 1 twisted pair using Burst Mode Transmmission Technique
– Loop range up to 6 kft (#24AWG)
– Alternate Mark Inversion coding with transmit Pulse Shaping DAC, Smoothing filter, and scrmbler for low EMI radiation
– Adaptive line equalizer
– On-chip timing recovery, no external components
– Programmable Time-Slot Assignment TDM interface for B channel
– Separate interface for D channel, with Programmable Sub-Slot Assignment
– 4.096MHz master clock
– MICROWIRE compatible serial control interface
– 5V operation
– 28-pin PLC package

3-5-3 Block Diagram



3-5-4 Pin Description



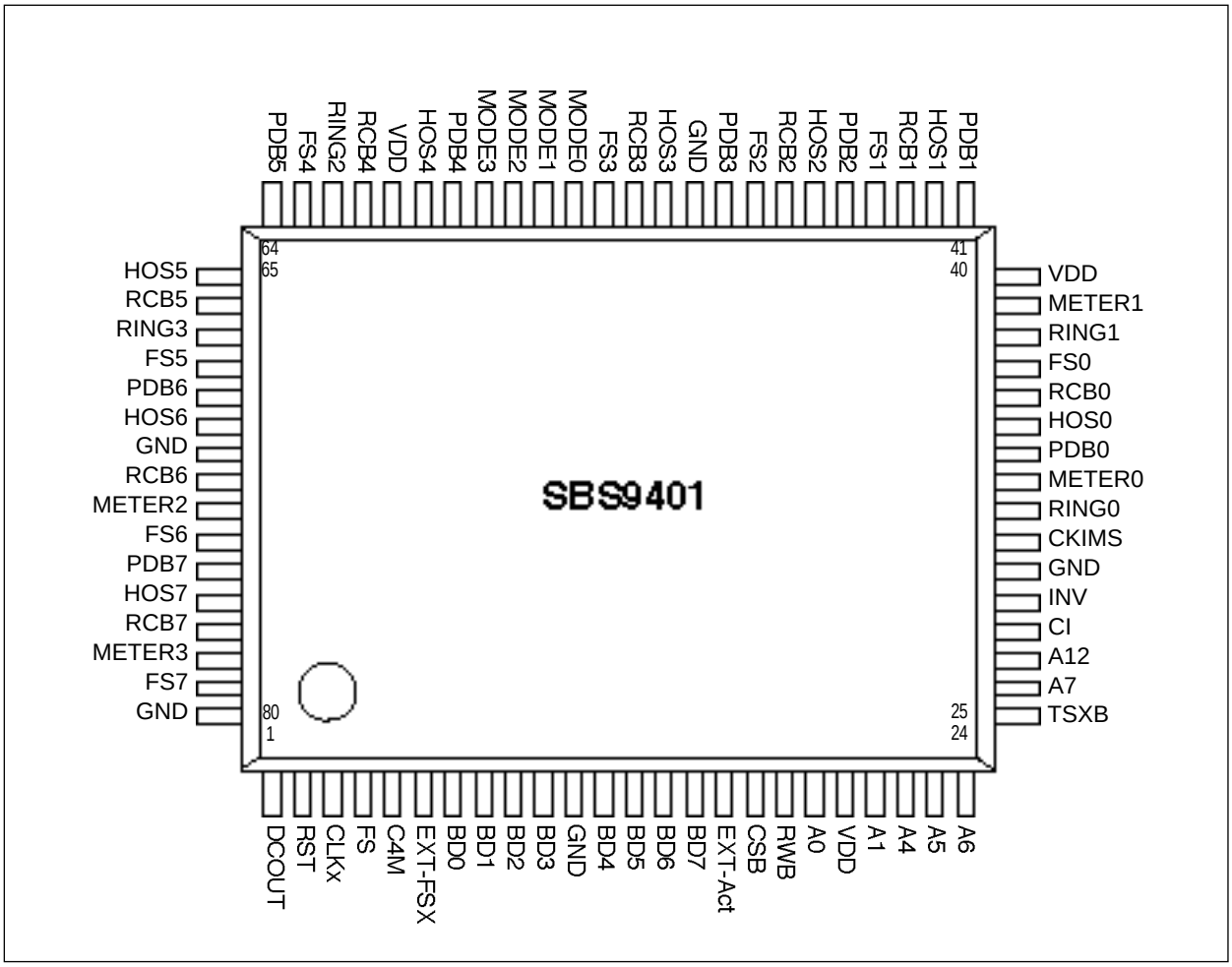
PIN NO	PIN NAME	DESCRIPTION
1	GNDA	Analog Ground or 0V. All analog signals are referenced to this pin.
15	GNDD	Digital Ground 0V. It must connect to GNDA with a shortest possible trace. This can be done directly underneath the part.
28	VDDA	Possible power supply input to QDASL analog section.It must be 5V±5%.
16	VDDD	Positive power supply input to QDASL digital section. It must be 5V±5%, and connect to VDDA with the shortest possible trace. This can be done directly undernearth the part.
11	FS	Frames Sync input: this signal is the 8KHz clock which defines the start of the transmit and receive frames at the digital interface.
9	MCLK	This pin is the 4.096MHz master clock input, which requires a CMOS logic level clock from a stable source. MCLK must be synchronous with BCLK.
10	BCLK	Bit clock logic input, which determin the data shift rate for B and D channel data at the BI, BO, DI and DO pins. BCLK may be any multiple of 8KHz from 256KHz to 4.096KHz, but must be synchronous with MCLK.
12	BI	Time-division multiplexed input for B1 and B2 channel data to be transmitted to the 4 lines. Data on this pin is shifted in on the failling edge of BCLK into the B1 and B2 channel during selected transmit time-slots.
13	BO	Time-division multiplexed receive data output bus. B1 and B2 channel data from all 4 lines is shifted out on the rising edge of BCLK on this pin during the assigned receive time-slots. At all other times this output is TRI-STATE (high impedance)
14	/TSB	This pin is an open-drain output which is normally high impedance but pulls low during any active B channel receive time slots at the BO pin.
7	DI	Time-division multiplexed input for D channel data to be transmitted to the 4 lines. Data on this pin is shifted in on the failling edge of BCLK into the D channel during the selected receive sub-time-slot.
8	DO	Time-division multiplexed output for D channel data received from the 4 lines. Data on this pin is shifted out on the rising edge of BCLK during the selected receive sub-time-slot.
19	CCLK	Microwire Control Clock input. This clock shifts serial control information into CI and out from CO when the /CS input is low, depending on the current insruction. CCLK may be asynchronous with the other system clocks.
21	CI	Control data input. Serial control information is shifted into the QDASL on this pin on the failing edges of CCLK when /cs low.
17	/INT	Interrupt request Output, a latched output signal which is normally high impedance and does low to indicate a change of status of any of the 4 loop transmission systems. This latch is cleared when the Status Register is read by the microprocessor. Bipolar Violation does not effect this output.
20	CO	Control data output. Serial control/status information is shifted out from the QDASL on this pin on the failling edges of CCLK when /CS low.
18	/CS	Chip select input. When this pin is pulled low, the Microwire interface is enabled to allow control information to be written in to and out from the device via the CI and CO pins. When high, this inhibits the microwire.
4, 3, 26, 25	Lo0, Lo1, Lo2, Lo3	Line drive transmit outputs for the 4 transmission channels, Each output is an amplifier intended to drive a transformer.
5, 2, 27, 24	Li0, Li1, Li2, Li3	Line receive amplifier inputs for the 4 transmission channels. Each LI pin is a self-biased impedance input which should be connected to the transformer via the recommended line interface circuit.

3-6 SBS 9401

3-5-1 Features

°‹8 ports TSAC (Time Slot Assignment Control)
°‹4 port UART (Universal Asynchronous Receiver & Transmitter)
°‹Signalling with 4 ports of digital telephone by controlling 4 ports RASL (Reduced Digital Adaptor for Subscriber Loops) through microchannel control.
°‹4 ports dial pulse generating.
°‹Designed to be used for 4 trunk type, 204 DLI type, 8 SLI type or 204 SLI type.
°‹For DCS COMPACT II (PULS) system, 8 SLI type is used. TSAC timing is the same as TMC's

3-5-2 Pin Map


SBS9401
PDB5 FS4 RING2 RCB4 VDD HOS4 PDB4 MODE3 MODE2 MODE1 MODE0 FS3 RCB3 HOS3 GND PDB3 FS2 RCB2 HOS2 PDB2 FS1 RCB1 HOS1 PDB1
64 65 41 40
HOS5 RCB5 RING3 FS5 PDB6 HOS6 GND RCB6 METER2 FS6 PDB7 HOS7 RCB7 METER3 FS7 GND
VDD METER1 RING1 FS0 RCB0 HOS0 PDB0 METER0 RING0 CKIMS GND INV CI A12 A7 TSXB
80 1 25 24
DCOUT RST CLKx FS C4M EXT-FSX BD0 BD1 BD2 BD3 GND BD4 BD5 BD6 BD7 EXT-Act CSB RWB A0 VDD A1 A4 A5 A6

3-5-3 Function Module Map

(Mode Pin : M3 = “0” & M2 ~ M0 = “1”)

Address	Read Data	Write Data	Remark
A12 A7 A6 A5 A4 A1 A0	D7 D6 D5 D4 D3 D2 D1 D0	D7 D6 D5 D4 D3 D2 D1 D0	
0 0 0 0 0 X X 0 1 X X 1 0 X X 1 1 X X 0 0 1 0 0 X X 0 0 0 0 0 X X 1 0 1 X X 1 1 0 X X 1 1 1 X X	X X X X X X X / SHD (8)	X / PD (8) X / RC (8) X X X X	
0 1 0 0 0 X X	NOT USED	DO : EXT ACT WRITE	
0 1 0 1 1 X X	NOT USED	NOT USED	NO D.P
1 0 0 0 0 X X 1 0 0 0 1 X X 1 0 0 1 0 X X 1 0 1 0 0 X X 1 0 1 1 0 X X 1 0 1 1 1 X X	CARD_ID READ (87/H) NOT USED	ENABLE X X TIME SLOT ASSIGNMENT CONTROL (0 ~ 31)	¶JTRUNK TYPE TIME SLOT 8PORT
1 1 0 0 0 X X	EXTERNAL TIME SLOT READ	ENABLE X X EXT-FSX ASSIGN	
1 1 1 0 0 0 0 1 1 1 0 0 1 0 1 1 1 0 1 0 0 1 1 1 0 1 1 0 1 1 1 1 0 0 0 1 1 1 1 0 1 0 1 1 1 1 1 0 0 1 1 1 1 1 1 0	TIME SLOT PORT #0 READ TIME SLOT PORT #1 READ TIME SLOT PORT #2 READ TIME SLOT PORT #3 READ TIME SLOT PORT #4 READ TIME SLOT PORT #5 READ TIME SLOT PORT #6 READ TIME SLOT PORT #7 READ	NOT USED	
1 1 1 1 1 1 1	ASIC TEST ADDRESS MAP READ	ASIC TEST ADDRESS MAP	

3-7 CODEC (TP3057)

3-7-1 General

The TP3057 consists of μ-law and A-law monolithic PCM CODEC/filters utilizing the A/D and D/A conversion architecture and serial PCM interface.

The encode portion of each device consists of an input gain adjust amplifier, and active RC prefilter which eleminates very high frequency noise prior to entering a switched-capacitor band-pass filter that rejects signals below 220Hz and above 3400hz.

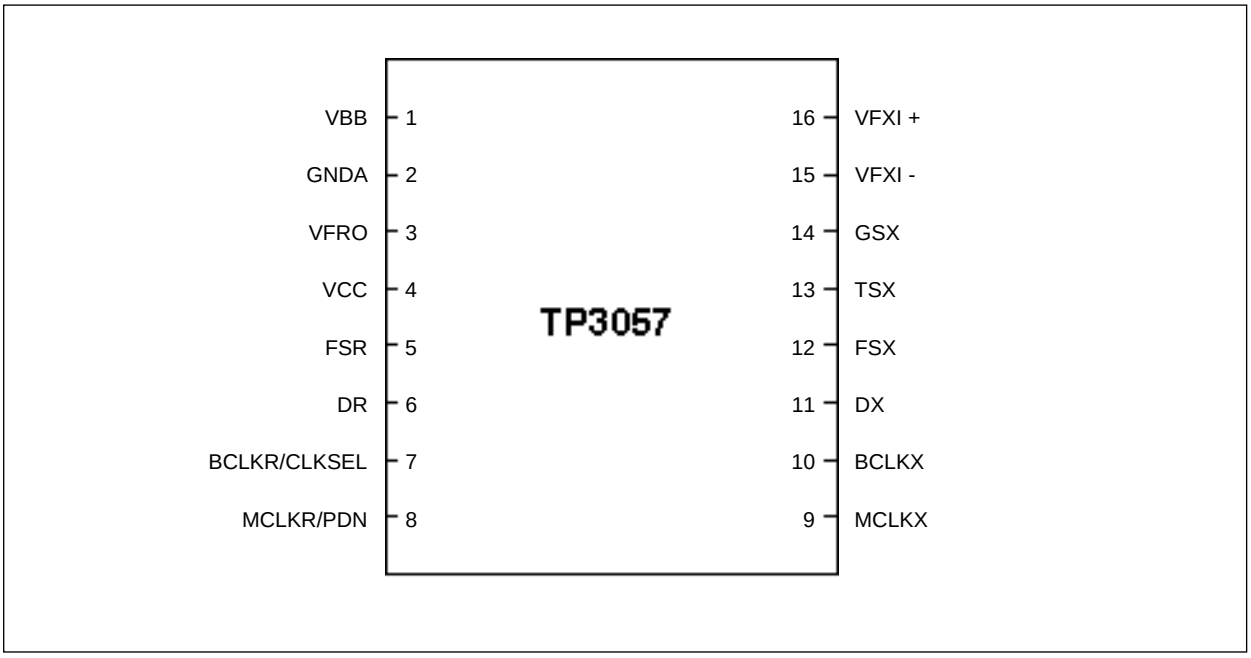
Also included are auto-zero circuitry and a companding coder which samples the filtered signal and encodes it in the companded μ-law or A-law code, a low-pass filter which corrects for the sin x/x response of the decoder output and rejects signals above 3400Hz followed by a single-ended power amplifier capable of driving low impedance loads.

The deivces require two 1.536MHz, 1.544MHz or 2.048MHz transmit and receive master clocks, which may be asynchronous; transmit and receive bit clocks, which may vary from 64KHz to 2.048MHz: and transmit and receive frame sync pulses. The timing of the frame sync pulses and PCM data is compatible with both industry standard formats.

Complete CODEC and filtering system (COMBO) includes:

- Transmit high-pass and low-pass filtering
- Receive low-pass filter with sin x/x correction
- Active RC noise filters
- μ-law or A-law compatible coder and decoder
- Internal precision voltage reference

3-7-2 Pin Map

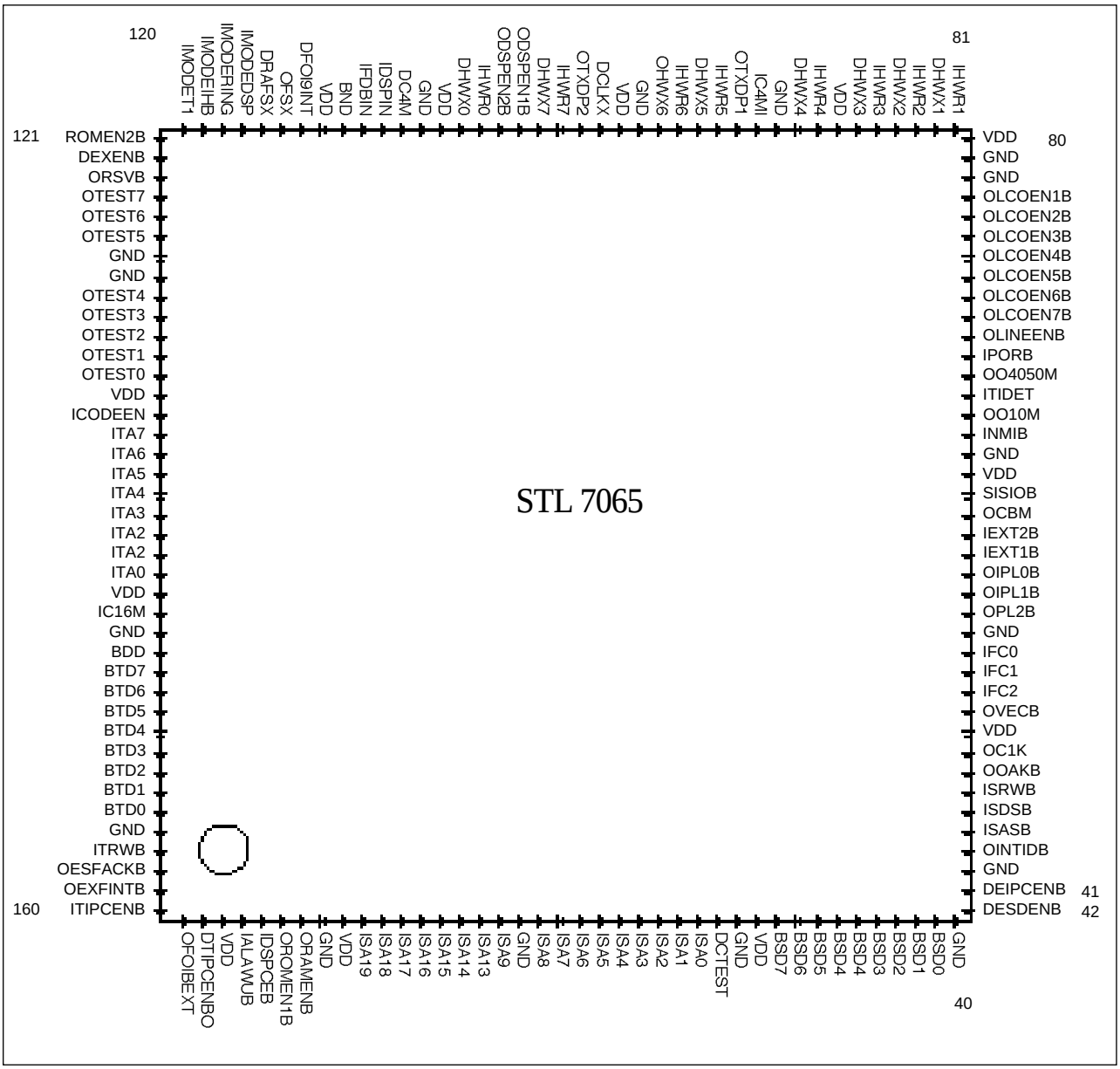

TP3057
VBB 1
GNDA 2
VFRO 3
VCC 4
FSR 5
DR 6
BCLKR/CLKSEL 7
MCLKR/PDN 8
16 VFXI +
15 VFXI -
14 GSX
13 TSX
12 FSX
11 DX
10 BCLKX
9 MCLKX

3-8 STL 7065

3-8-1 General

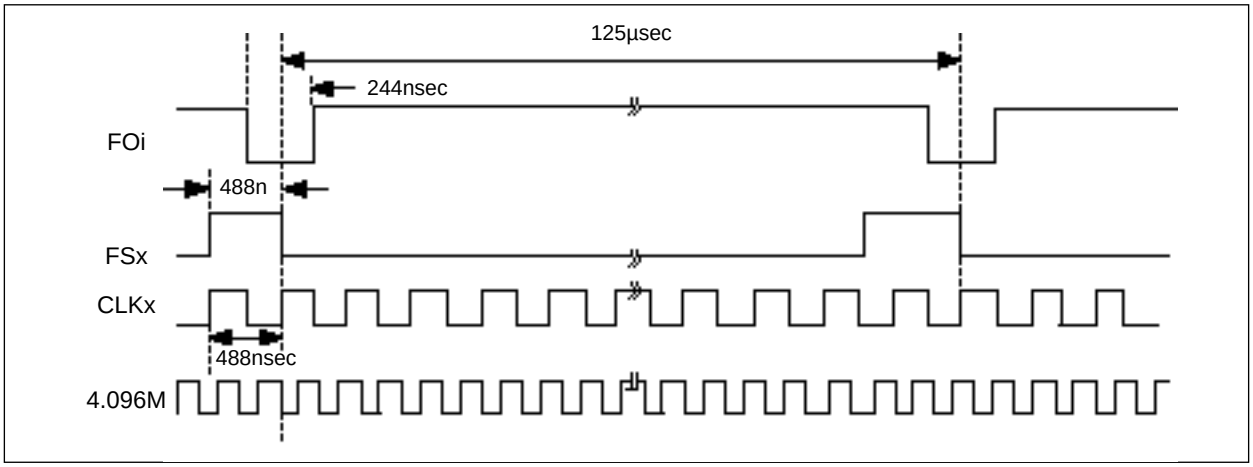
STL7065 is ASIC which performs various functions. It controls main system in COMPACT System. But in COMPACT II(PLUS), it is used as DTMFR mode only at the MISC card.

3-8-2 Pin Map

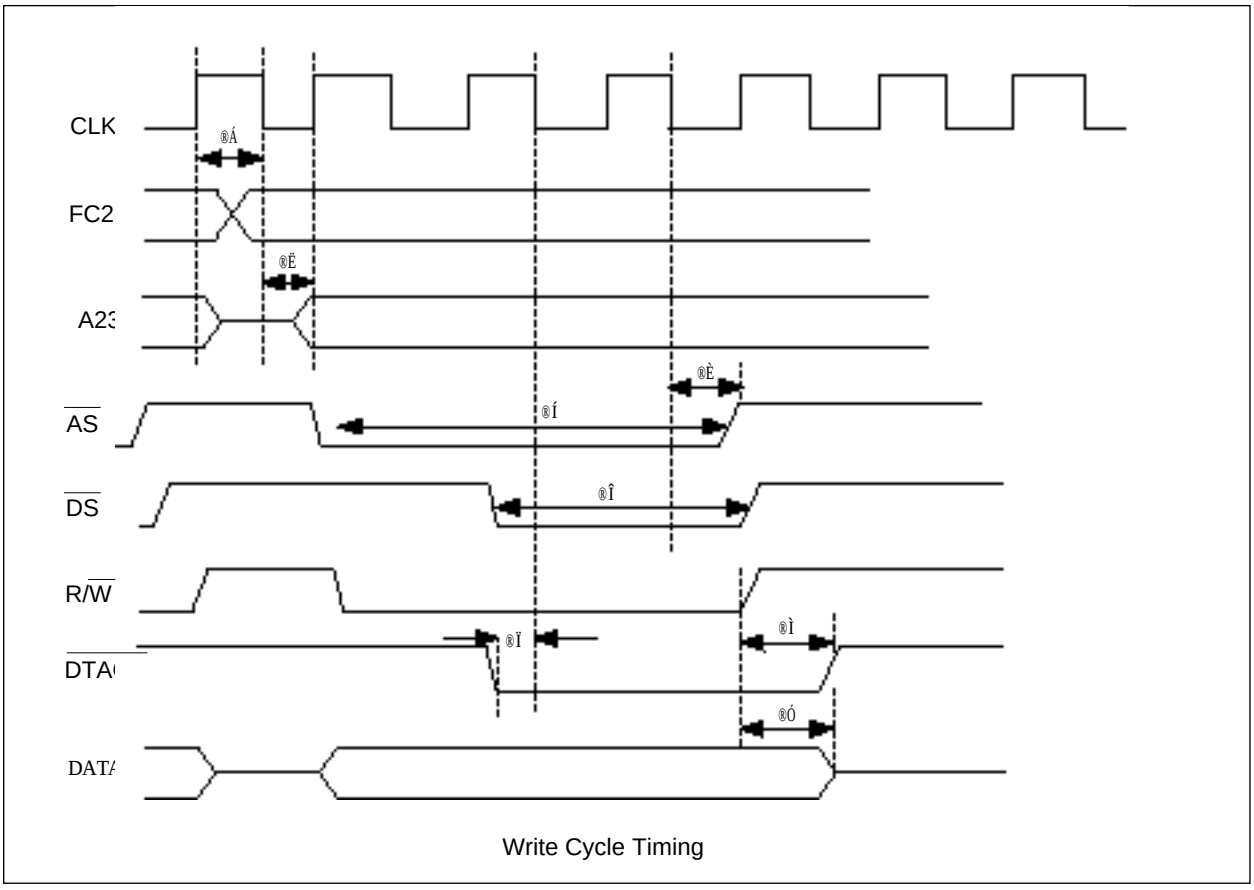


3-9 Timing Chart

3-9-1 CLK

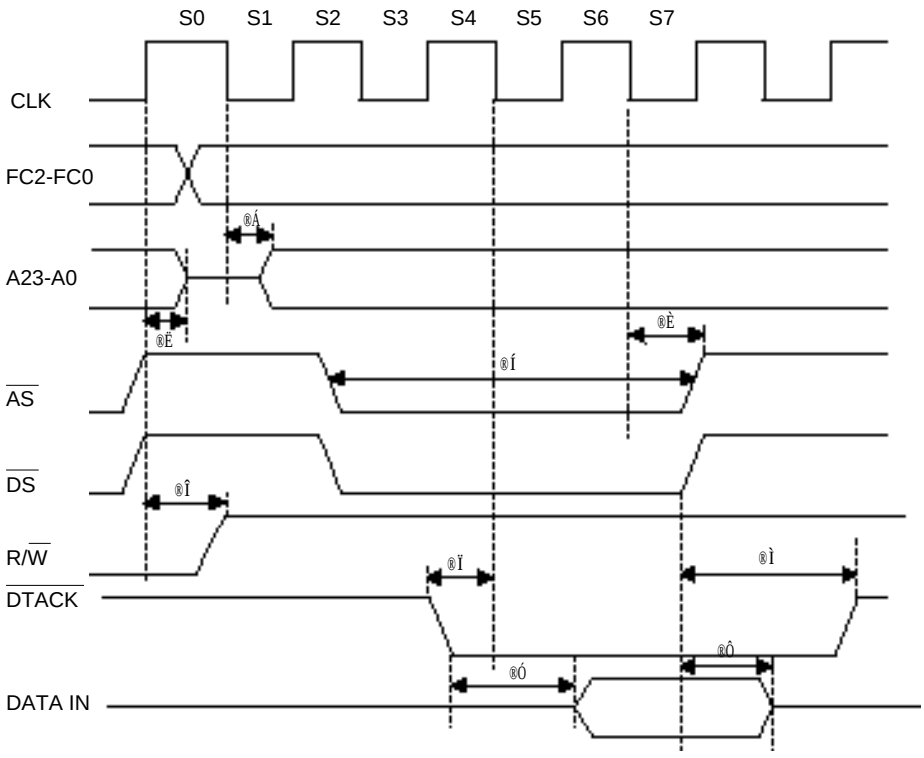


3-9-2 Processor



Write Cycle Timing

	min(ns)	max(ns)
®Á	£ ≠	35
®Ë	£ ≠	35
®È	3	35
®Í	270	£ ≠
®Î	140	£ ≠
®Ï	5	£ ≠
®Ì	0	110
®Ó	40	£ ≠

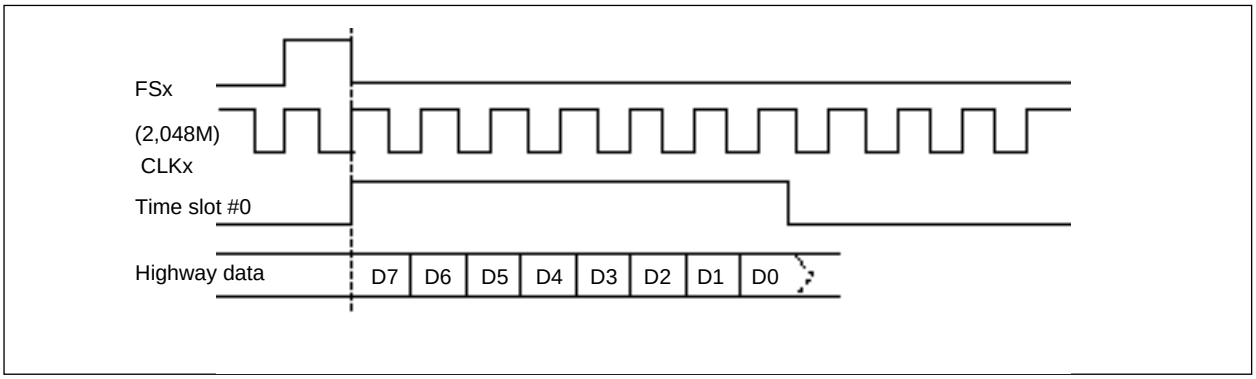


Read Cycle Timing

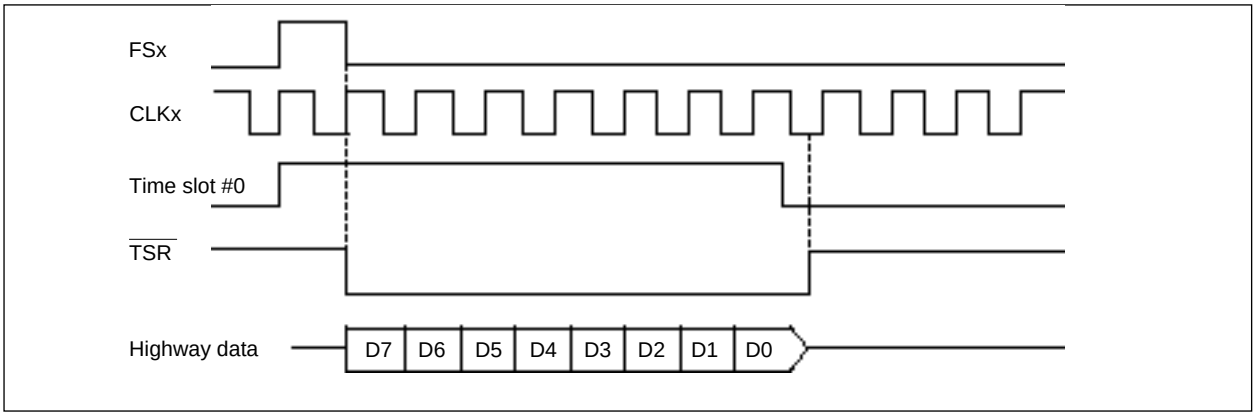
CLK-8KHz:(S_0+S_1=125nsec)

	min(ns)	max(ns)
®Á	£ ≠	35
®Ë	£ ≠	35
®È	3	35
®Í	270	£ ≠
®Î	0	35
®Ï	5	£ ≠
®Ì	0	110
®Ó	£ ≠	90
®Ô	0	£ ≠

3-9-3 TMC



3-9-4 DMC



Chapter 2

Circuit Description

2-1 008 Base B'd.....2-3

2-2 Mem Card.....2-14

2-3 3 TRK Card.....2-17

2-4 6 TRK Card.....2-18

2-5 8 SLI Card.....2-19

2-6 2 SLI Card.....2-21

2-7 8 DLI Card.....2-22

2-8 MISC Card.....2-23

2-9 S0T0 Card.....2-28

2-10 PRI Card 2-36

2-11 PLL B'd 2-40

2-12 Ringer B'd.....2-42

2-13 SIM Module.....2-42

2-14 DPIM Module.....2-45

2-15 Digital Keyset.....2-47

2-16 KDB-d B'd.....2-60

2-17 KDB-s B'd 2-62

2-18 Power Supply.....2-63

2-1 008 Base B'd

° ‹ 008 Base B'd performs as a Mother B'd. The processor (MC68EC000) collects and analyzes all the signal data occurred when the system operates, and determines the system operation.

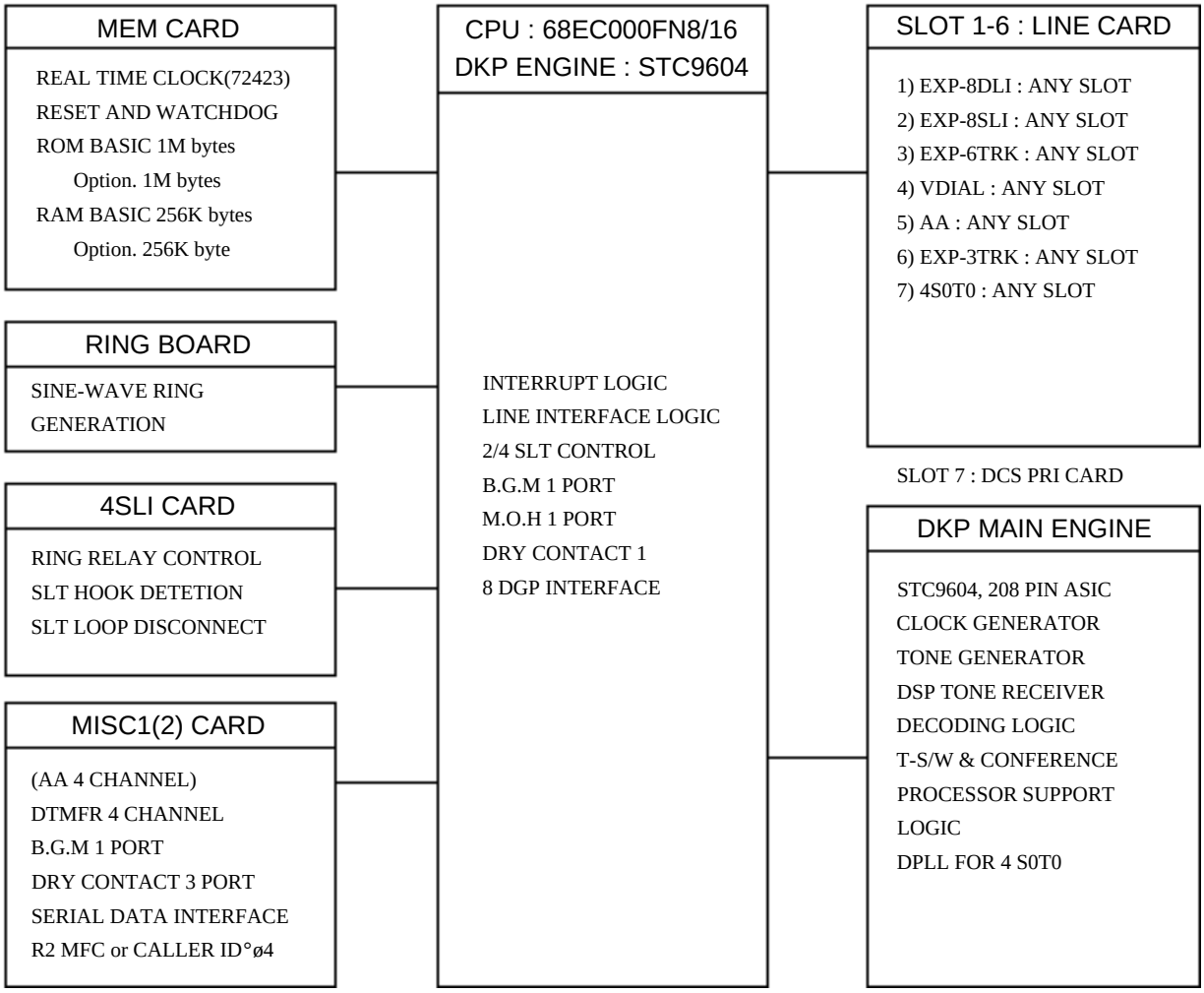
° ‹ Memory consists of 1 M Bytes program ROM (To expand system program, ROM 1M Bytes can be added) in the MEM B'd, and 256K Bytes RAM in the MEM B'd (basic 256K Bytes and option 256K Bytes) .
512K Bytes RAM in the RAM B'd (include option 256K Bytes) is backed up by the battery to save data in case of long time power failure (about 1 week). The backup switch should be ON position to back up the memory.

° ‹ DTMF SENDER, TONE GENERATOR, TIMING GENERATOR, DSP TONE RECEIVER, TIME SWITCH & CONFERENCE are composed into one ASIC STC-9604.

° ‹ DSP in the DKP ENGINE STC9604 receives the DTMF signal from the C.O. line. It can treat 4 channels (MAX) received at the same time.

° ‹ Time switch of the STC9604 accomodates 256 channels. Conference can be performed with 6 groups of 5 parties.

2-1-1 Block Diagram



2-1-2 Memory Map

ADDRESS		SIG NAME	READ	WRITE	REMARK
0XXXXX		OROMEN1B	PROGRAM ROM(1MBYTE) : WORD OPERATION, 27C4001°ø2 MEMCARD		
1XXXXX		OROMEN2B	PROGRAM ROM(1MBYTE) : WORD OPERATION, 27C4001°ø2MEM CARD, OPTION		
2XXXXX		OPCMCIAENB	RTC		
3XXXXX	300001	CPM DTMF/TONE DETECTION CONTROL	RESULT OF CH1 DETECTION	DETECT CNTL L	
	300011		RESULT OF CH2 DETECTION	DETECT CNTL H	
	300021		RESULT OF CH3 DETECTION	DOWNLOAD	
	300031		RESULT OF CH4 DETECTION	DOWNLOAD	
	300041		DSP RAM L	£ ≠	
	300051		DSP RAM H	£ ≠	
	300061		£ ≠	AA DSP SW RSTB	
	300071		DSP CONTROL	DSP CONTROL	
4XXXXX	400XX1	TIME SWITCH	SPEECH MEMORY	£ ≠	
	420001		CONF.1 CONTROL	CONF.1 CONTROL	
	420011		CONF.2 CONTROL	CONF.2 CONTROL	
	420021		CONF.3 CONTROL	CONF.3 CONTROL	
	420031		CONF.4 CONTROL	CONF.4 CONTROL	
	420041		CONF.5 CONTROL	CONF.5 CONTROL	
	420051		CONF.6 CONTROL	CONF.6 CONTROL BIT7≐Æ1°Ø CM READ ENABLE	
	420061		OVERFLOW STATUS	HIGHWAY ENABLE CONTROL	
	420071		£ ≠	SM REGISTER READ ENABLE	
	420801~ 4209FF		SIGNALING MEMORY	£ ≠	
	440001~ 440FFF		CONTROL MEMORY L	CONTROL	
	460001~ 461FFF		CONTROL MEMORY H	CONTROL	

ADDRESS	SIG NAME	READ	WRITE	REMARK
5XXXXX	TMC	£ ≠		
6XXXXX	QDMC	£ ≠		
7XXXXX	SIO	INTERNAL UART CONTROL & DPLL		
	LINE CARD ENABLE			
800000~81FFFF		MISC EN		
820000~83FFFF		RESERVED		
840000~85FFFF		RESERVED		
860000~87FFFF		SLOT1 (/CS1)		
880000~89FFFF		SLOT2 (/CS2)		
8A0000~8BFFFF		SLOT3 (/CS3)		
8C0000~8DFFFF		/UART (68681) EN		
8EXXXX	/INTIDB	INTSIO : INT SIO (INTS) DATA FROM SLOT1 TO SLOT7 D0 : /INTS0 (INTERNAL DMC) D1 : /INTS1 (CS1 EN) D2 : /INTS2 (CS2 EN) D3 : /INTS3 (CS3 EN) D4 : /INTS4 (EXP1 EN) D5 : /INTS5 (EXP2 EN) D6 : /INTS6 (EXP3 EN) D7 : /INTU (UART & MODEM INT : MISC)		
8FXXXX	/INTIDB	INTDASL : INT DASL(INTD) DATA FROM SLOT1 TO SLOT7 D0 : /INTS0 (INTERNAL DMC) D1 : /INTS1 (CS1 EN) D2 : /INTS2 (CS2 EN) D3 : /INTS3 (CS3 EN) D4 : /INTS4 (EXP1 EN) D5 : /INTS5 (EXP2 EN) D6 : /INTS6 (EXP3 EN)		
9XXXXX		RESERVED		
A00000~A7FFFF	/RAM1EN	512KBYTES, 681000°ø4, MEM CARD		
A80000~AFFFFF	/RAM2EN	512KBYTES, 681000°ø4, RESERVED		
B00000~B7FFFF	/RAM3EN	512KBYTES, 681000°ø4, RESERVED		
B80000~BFFFFF	/RAM4EN	512KBYTES, 681000°ø4, RESERVED		

ADDRESS		SIG NAME	READ	WRITE	REMARK
C00000~C1FFFF		LINE CARD ENABLE(RSVB)	/EXP1 EN		
C20000~C3FFFF			/EXP2 EN		
C40000~C5FFFF			/EXP3 EN		
C60000~C7FFFF			/EXP4 EN		
C80000~C9FFFF			RESERVED		
CA0000~CBFFFF			/WAT EN		
CC0000~CDFFFF			/LED EN(monitor)		
CE0000~CFFFFF			RING SYNC. INTERRUPT CLEAR		
DXXXXX	D00007~ D007FF	DTMF/TONE GENERATION	GAIN	GAIN	
	D00800~ D00FFF		STEP SIZE	STEP SIZE	
	D01000~ D017FF		ACC RAM	ACC RAM	
	D01801		CADENCE1	CADENCE1	
	D01811		CADENCE2	CADENCE2	
	D01821		MODE	MODE	
	D01831	CONTROL REGISTERS	£ ≠	CNTL REG A	
	D01841		£ ≠	CNTL REG B	
	D01851		£ ≠	CNTL REG C	
	D01861		£ ≠	CNTL REG D	
	D01871		£ ≠	CNTL REG E	
	D01C01	CPM DTMF/TONE DETECTION	£ ≠	TIME SLOT1	
	D01C11		£ ≠	TIME SLOT2	
	D01C21		£ ≠	TIME SLOT3	
	D01C31		£ ≠	TIME SLOT4	

ADDRESS		SIG NAME	READ	WRITE	REMARK
EXXXXX	E00001	EXP 1 (DSPMODE) DTMF/TONE DETECTION CONTROL	RESULT OF CH1 DETECTION	DETECT CNTL L	
	E00011		RESULT OF CH2 DETECTION	DETECT CNTL H	
	E00021		RESULT OF CH3 DETECTION	DOWNLOAD CNTL L	
	E00031		RESULT OF CH4 DETECTION	DOWNLOAD CNTL H	
	E00041		DSP RAM L	£ ≠	
	E00051		DSP RAM H	£ ≠	
	E00061		£ ≠	DSP SW RSTB	
	E00071		DSP CONTROL	DSP CONTROL	
	E00081		£ ≠	TIME SLOT1	
	E00091		£ ≠	TIME SLOT2	
	E000A1		£ ≠	TIME SLOT3	
	E000B1		£ ≠	TIME SLOT4	
FXXXXX	F00001	EXP 2 (DSPMODE) DTMF/TONE DETECTION CONTROL	RESULT OF CH1 DETECTION	DETECT CNTL L	
	F00011		RESULT OF CH2 DETECTION	DETECT CNTL H	
	F00021		RESULT OF CH3 DETECTION	DOWNLOAD CNTL L	
	F00031		RESULT OF CH4 DETECTION	DOWNLOAD CNTL H	
	F00041		DSP RAM L	£ ≠	
	F00051		DSP RAM H	£ ≠	
	F00061		£ ≠	DSP SW RSTB	
	F00071		DSP CONTROL	DSP CONTROL	
	F00081		£ ≠	TIME SLOT1	
	F00091		£ ≠	TIME SLOT2	
	F000A1		£ ≠	TIME SLOT3	
	F000B1		£ ≠	TIME SLOT4	
8, 9, E, FXXXXX		OEXDENB	£ ≠		

2-1-3 Circuit Description

CPU

CPU is fabricated using Motorola 68EC000FN8/16. 68EC000FN8/16 is compatible with 8-bit or 16-bit mode operation. 16-bit mode is available by setting MODE pin to high or open. In this system. 16-bit mode is used. 8.192MHz supplied from STC9604 is used for clock and it is required to apply over than 100ms for reset time.

Pin Description

° A0 - A23 (Address Bus) : 16M byte Memory
° D0 - D15 (Data Bus) : LDS for D0 - D7, UDS for D8 - D15
° AS (Address Strobe) : Address is available while AS is low
° R/W (Read/Write)
° UDS, LDS (Upper and Lower Data Strobe)

UDS	LDS	Data Byte Selected
0	0	Word operation
0	1	Upper byte (D8 - D15)
1	0	Lower byte (D0 - D7)
1	1	No valid data

° DTACK (Data Transfer Acknowledge) : Wait signal
° IPL2 ~ IPL0 (Interrupt Priority Level) : Interrupt priority level of 68EC000 is determined with this 3 signal inputs.

Engine (STC-9604)

Clock generator

The 16MHz system clock output from 16MHz oscillator is provided to STC9604. Engine (STL9604) generates 8.192MHz, 4.096MHz, 2.048MHz, 1KHz, and 20/25Hz, 8.192MHz is provided to CPU and the rests are provided to the line control IC.

Time Switch

It performs switching for 8 highway (total 256 channels). 8-steps gain control is available.

Digital Conference

It is possible to support 6 groups of 5 parties. Any 5 of 256 channels can be assigned to the station who is joined into the conference.

Tone/DTMF Generation

It generates 15 Dual/signal tones and 16 DTMFs at each 32 channels by using the sine wave from data in STC9604.

Tone/DTMF Detection

Highway data from the time slot determined in TSAC is supplied from IDSPIN (Pin61) of STC9604. The input signal is converted to 8-bit parallel data and stored into the allocated registers for each channels.

The DSP core (inside STC9604) starts detecting by reading the enabled channel PCM data at every 125μs interrupt, Detecting is achieved only with tone detect control register enabled channel from CH1 to CH4 during 125μs interrupt. If a valid tone or DTMF signal is detected, the result is recorded to the relevant register of each channels. CPU will read the data at the register.

Digital Line Interface (DLI)

8 DLIs equipped into the 008 Base B'd performs interface between SIM, DPIM, and digital phone. It uses QDASL chip (TP3404). The QDASL uses 2B+D at each port.

Signal transmission is achieved with 144 kbps full duplex AMI (Alternative Marking Inversion) code transmission mode. End to end communication supports voice channel B1 and B2, and two extension phones can be connected to 1 port.

192 kbps is used for actual transmission between DLI and digital phone, 16 kbps for sync, and the rests are used for null data.

Transmission distance between DLI and digital phone covers a maximum of 400m by using AWG26 transmission code.

Parallel control data out from UART of internal DMC (in the STC9604) is converted to serial data and transmitted to DASL. DASL transmits the control data to the digital phone in a format of AMI code. The control data out from the digital phone is transmitted to the CPU through the reverse process.

Internal DMC interface

Address A4, 5, 8, 9, 10, 11, 16 are used for communication between DMC and CPU. There are Addresses to read/write each port D CH's data, to be masking INT status, to read INT status of DASL and to be setting as the LOOP BACK MOOD for test. The interface includes the data bus D0 - D7 and INT Rx0, Rx1, and INT Tx0, Tx1. The Rx INT will be enable when even one byte is received in the buffer, and Tx INT will be enable when the buffer is empty.

If INT is enabled, CPU reads the INT status and performs INT service for the port of the selected bit. The INT status is cleared as soon as CPU read it. For highway (B-CH) control HC125 (Tristate Buffer) is located between the time switch and DASL, it is enabled by TRS (pin14) of DASL. BCLKx (2.048MHz), B4M, and CCLK (1.028MHz) are provided for clock.

QDASL Interface

DX & DR can transmit D-CH's serial data of each port. B-CH & D-CH are scrambled to the AMI code and transmitted with line.
INT0 - INT1 are used to control the micro channel interrupt of each channel. DASL INT is occured only when micro channel access. No signal (C0), Out of SYNC (C1), and Bipolar violation (C7) are required to generate DASL INT. Since INT occurs only when power turns on at first time and the DASL status is changed by some error, INT is designed to tie up with UART Tx by using AND gate.

DGP Interface

DLT1 (T2-5, T7-10) is used for matching transformer. Resistance (100Ω) at L0 of DASL is for matching Impedance. 2 μF are used to reduce noise. Zener Diode is for hazard protection.

TMC

Internal TMC (Trunk 8 Channel)

BGM 1 Port

008 Base B'd has one optional background music input 1 port. It can be selected between Internal and External. In case of Internal, used to melody IC.

PAGE 1 Port

The port is for external paging. PCM data (from highway 0 Rx) is switched to analog signal and the analog signal is fed to transformer (T2).

DRY Contact

It is dry contact relay 1 port. It makes use of EXTACT signal that received from engine to operate Relay.

Control Signal for 2 or 4 SLI

It is generated at TMC port (in engine) to control 2 or 4 SLI card.

MISC Interface

It includes Dry contact, external MOH, RS232C interface, 4 Channel DTMF receiver, 4 Channel Automatic Attendant (AA), Caller ID, Alarm Sensing.

Expand B'd Interface

64pin connector is provided to connect the signals to expand the B'ds. Refer to the circuit diagram for the pin assignment.

DPLL (Digital Phase Locked Loops)

°‹Produced 4.096MHz for S0T0

°‹2 kinds of DPLL support for PRI (Primary Rate Interface) - for testing

°‹Use Clock Burst Correction Scheme with using Master Clock Divide

Address Bus	Data Bus (D7 - D0)	
	Micro-processor Write	Micro-processor Read
$ 700,001H	D-PLL Control Register Write	Readable
$ 700,011H	D-PLL Test Register Write	Readable

D-PLL Register Map

2-2 MEM Card

Capacity

Basic ROM	1M Bytes Address Scope : $000,000H$-OFF, FFFH	27C4001 °ø 2
Option ROM	1M Bytes Address Scope : $100,000H-$1FF, FFFH	27C4001 °ø 2
Basic RAM	256K Bytes Basic Address Scope : $A00,000H-$A3F, FFFH	681000 °ø 2
Option RAM	256K Byte Address Scope : $B00,000H-$B3F, FFFH	681000 °ø 2

2-2-1 Circuit Description

Real Time Clock (RTC)

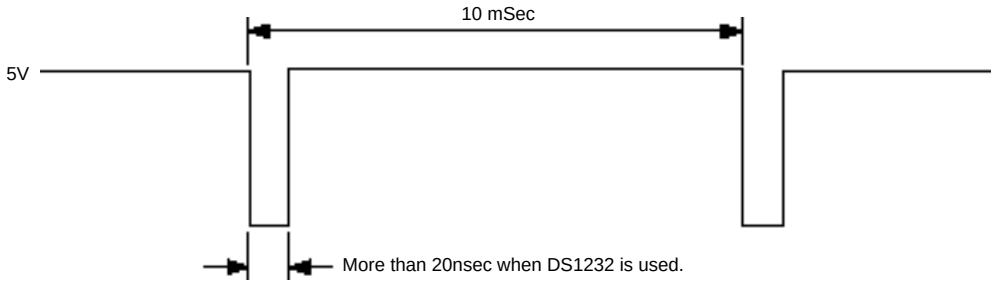
RTC72423 (U12) which has small access time is used for RTC (Real Time Clock). It is equipped in the MEM Card for battery back up function. CPU is connected at data bus D8 - D11 and A1 - A4 is used.

Memory Backup

60mAH battery equipped in the MEM Card is used for memory backup by 4 RAMs and RTC IC in case of power failure for a maximum of one week. To erase the RAM and the RTC data, set the backup switch to OFF and turn the power OFF. Software reset also available.

Watch Dog

It monitors the address within the specified range and reset the system if it cannot access the address within a specified time. If the program does not work properly, the watch dog address can not be accessed within a specified time, and Watch dog circuit resets CPU. Watchdog is inserted to ST* of Micromonitor Chip DS1232S (DALLAS).



TD	TIMEOUT (mSec)		
	Min	Typical	Max
GND	62.5	150	250
FLOAT	250	600	1000
Vcc	400	1200	2000

Watchdog timeouts of DS1232

When watchdog works DS1232 guratees the reset time of minimum 250 ms, which result in CPU reset time to be of 100ms. Output reset time is adjustable by controlling TP pin of DS1232.

Power On Reset

DS1232S resets the CPU when power turns ON. It stabilizes the system operation. DS1232 accepts a minimum of 250ms as reset time and the reset voltage to be 4.5V by adjusting TOL pin.

TOL Pin 3	Voltage		
	Min	Typical	Max
VCC	– 5V	4.5V	+ 5V
GND	– 5V	4.75V	+ 5V

DS1232S Minimum Reset voltage

Manual Reset

Manual Reset can be operated by turn on TACT SWITCH being connected PBRST* pin.

LED Indication

One LED which shows the system status according to the system programming is equipped in the mem card.

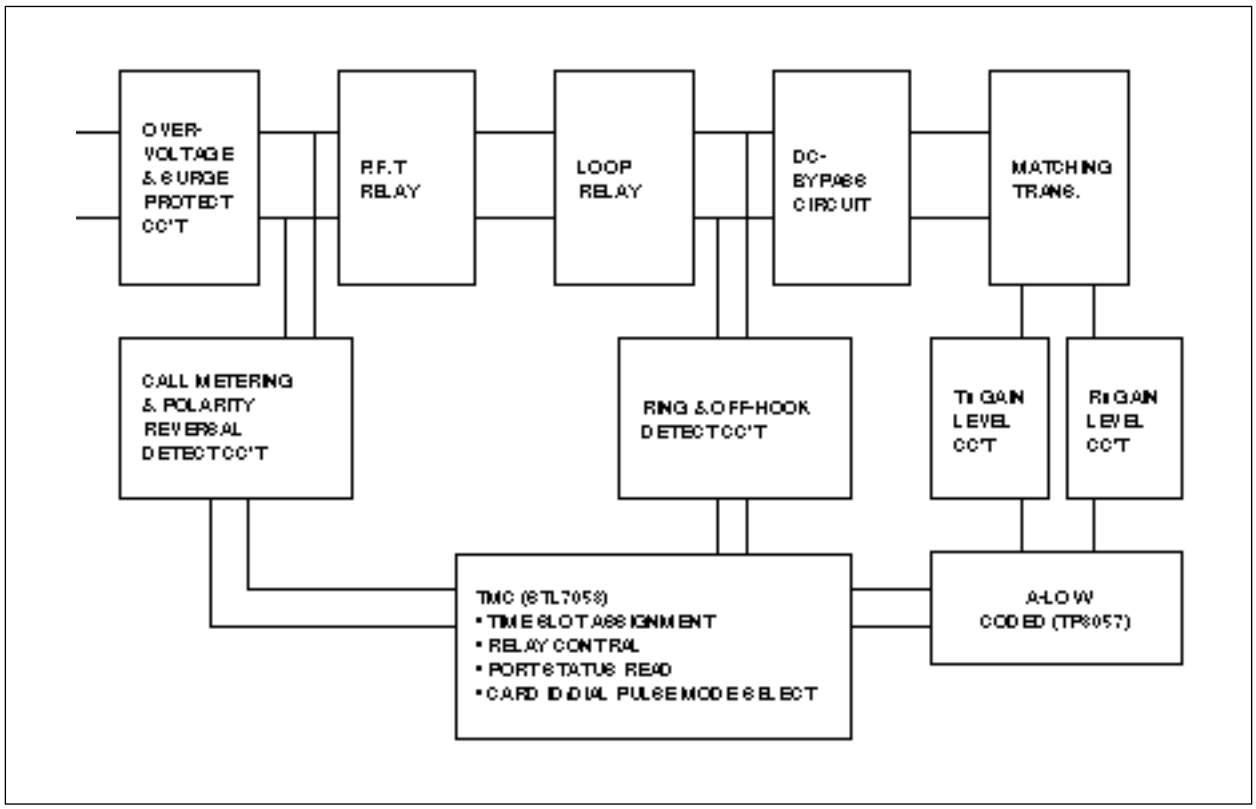
LED Off : Abnormal power

LED On : Power is normal but system does not work properly

LED Flicker : Both power and system are normal. (Normal system means memory read/write and decoding logic work properly)

2-3 3-TRK Card

2-3-1 Block Diagram



2-3-2 Circuit Description

Loop Trunk Interface 3 Port

Sending and Receiving voice frequency range (300 ~ 3400Hz) between keyphone system and trunk line are achived with DC Current Bypass Circuit, Matching Transformer, Balancing Network, Hybrid Circuit, PCM Codec, Channel Assign Timing Control, Digital Gain Control circuit. DC By-pass circuit is needed for using small transformer with DC bypass before T1, T2, T3 transformer. Off-hook (H.O.S) & Ring Signal Detecting Circuit are in this internal circuit. Loop Start Trunk is applied to system which has complex resistive impedance.

Surge and Over Voltage Protection Circuit

FUSE TYPE SURGE - Absorber for first protection circuit, T.V.S (1.5KE15A) for second protection circuit and ZENER DIODE for third protection circuit are provided to protect the system from surge and over voltage damage at 3 trunk lines.

P.R.S (Hook On/Off Sensing) Circuit

It is signal polarity reverse detecting circuit of C.O line interface. Be careful TIP - RING LEAD's polarity when installing system at the site.

Ring incoming signal detection circuit

Ring Incoming signal from C.O is available when TRK interface is hook-on status, regardless of trunk type. DC voltage of Ring signal is cut by poly - capacity (0.82μF/250V) and ring signal above reference value (relation with Zener diode (5.1V)) is passed.
Ring signal generates Ring Detection Signal when above setting voltage (1.2V) is flowed through serial connected Diode (2EA) and parallel connected photo coupler input. It switched high if righ signal is applied.

DC Current Bypass Circuit

This circuit seizures DC LOOP and passes AC signal to the next step. It generates output of H.O.S detection to the system with photo coupler.

Caller ID Relay

It makes PATH (by RL4, RL5, RL6) to Detect Caller ID in 1200 bps FSK signal received between ring and ring during ON HOOK state. DSP for Caller ID is in the MISC card.

Balance Network

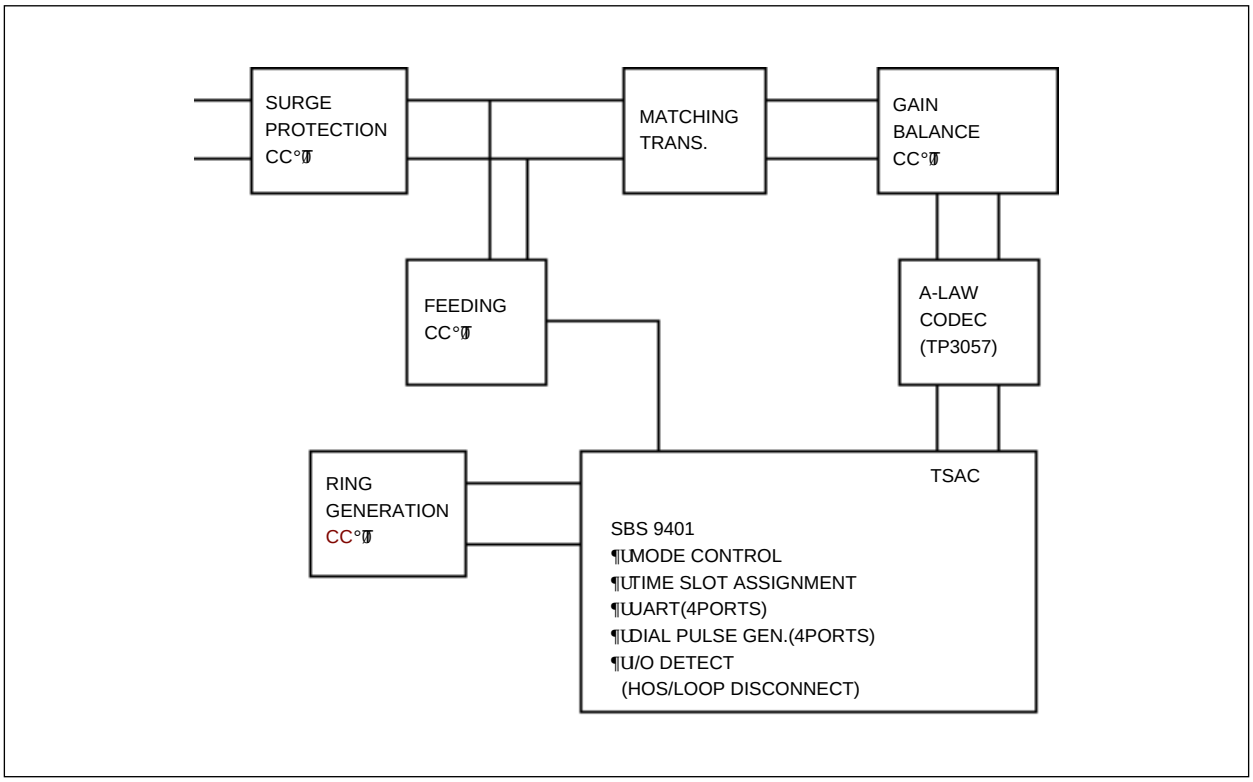
It is used for 2W/4W interface. Tx uses OP AMP(3404) and Rx uses OP AMP in the codec.

2-4 6 TRK Card

It has 6 loop start trunk port and 2 PFT port.

2-5 8 SLI Card

2-5-1 Block Diagram



2-5-2 Circuit Description

Voice Path

The voice signal from subscriber is fed to primary T1 with AC plus DC forms. The output signal from T1 is AC signal. Balance logic with using OP - AMP (MC34072D) transmits and receives +2.0dBm to the Tx port of CODEC, –7.0 dBm down to the subscriber from Rx port, then is supplied to HIGHWAY 0 after converts signal as PCM Code by CODEC.
CODEC receives 2.048MHz clock frequency, and loads 8KHz Delayed PCM DATA to DX & DR by sampling for each 8KHz. A - LOW is used by Pull UP BCLKR, 7th Pin of codec.

SLI Interface

– DC Loop Disconnection

It is composed with Connection and Disconnection DC Loop. If LD Signal pin (output of ASIC IC (SBS9401)) is LOW, DC(–48) is supplied to the LINE and restricted current flowing to the LOOP by connecting 300Ohm. If LD Signal is HIGH, DC loop is cut.

– Loop & Pulse Detection

LOOP DETECTION detects hook on/off state of single line telephone. When hook - off is occured, DC loop is enabled. TR (Q33) EMITTER port is lower than GND LEVEL, so TR (Q41) is off and output is HIGN. Normal state output is LOW.

When subscriber uses DIAL PULSE, detects DIGIT state as the same above procedure.

– Ring Trip

If the subscriber lift handset when the telephone is ringing, Relay are released to finish the ring signal transmission. When the subscriber hook - off during ringing, Collector of TR (Q41) outputs HIGH.

– Ring Generator Circuit

Ring (80Vrms/40mA, 20/25Hz) is transmitted to the line with driving RELAY (TQ - 5V) controlled by RCO - 1 received from BASE008 B'D when to generate Ring. Ringer circuit is composed of pulse for small and simple.

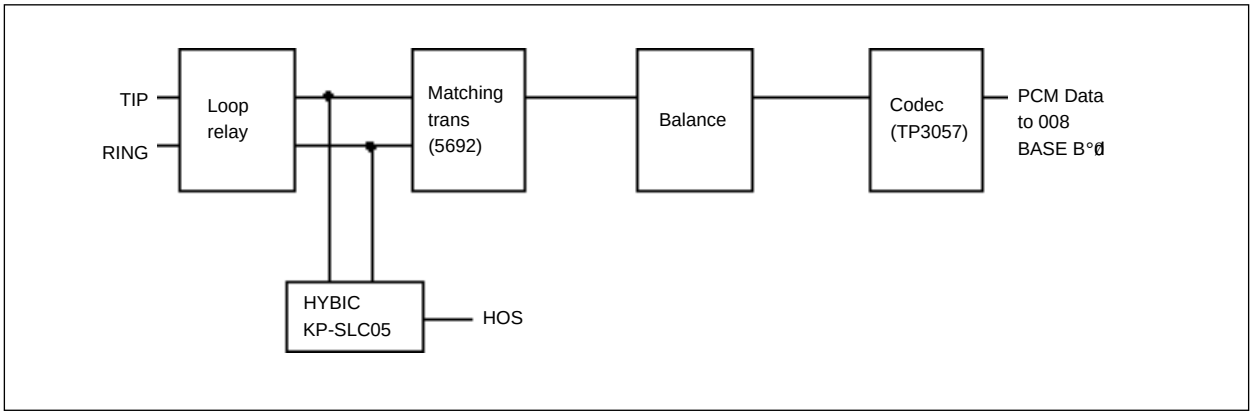
– Balance Network

It is used for 2W/4W SLC interface. In this circuit, Hybrid IC (KP0070SA) equipped with 4 port OP - AMP uses at each Tx port and OP AMP in the codec uses at Rx port.

2-6 2-SLI Card

It is used to same card with COMPACT.

2-6-1 Block Diagram



2-6-2 Circuit Description

SLI Voice Interface

The signal from the regular telephone is fed to primary T1 (5692) through the pins 2,3,7, and 6 of K1, and C103, C104. The output signal from T1 is fed to VFXI (pin15) of U102 through the balance circuit HYB4, then is supplied to Highway 0 in a format of PCM data.

DC Feeding

–55V DC, the power to operate a single line telephone, comes out from pin 2 and 4, and is supplied to the regular telephone.

Hook Detection & Dial Pulse Detection

HYB1 is used to detect hook on/off signal or pulse dial on a signal line telephone. If the phone is off - hook of during the make time of pulse, HYB1 pin5 becomes low, and if the phone is on - hook of during the break time of pulse, HYB1 pin5 becomes high. The condition of pin 5 transfers to the pin 23 of U20 in the 008 Base B'd.

Ring Trip

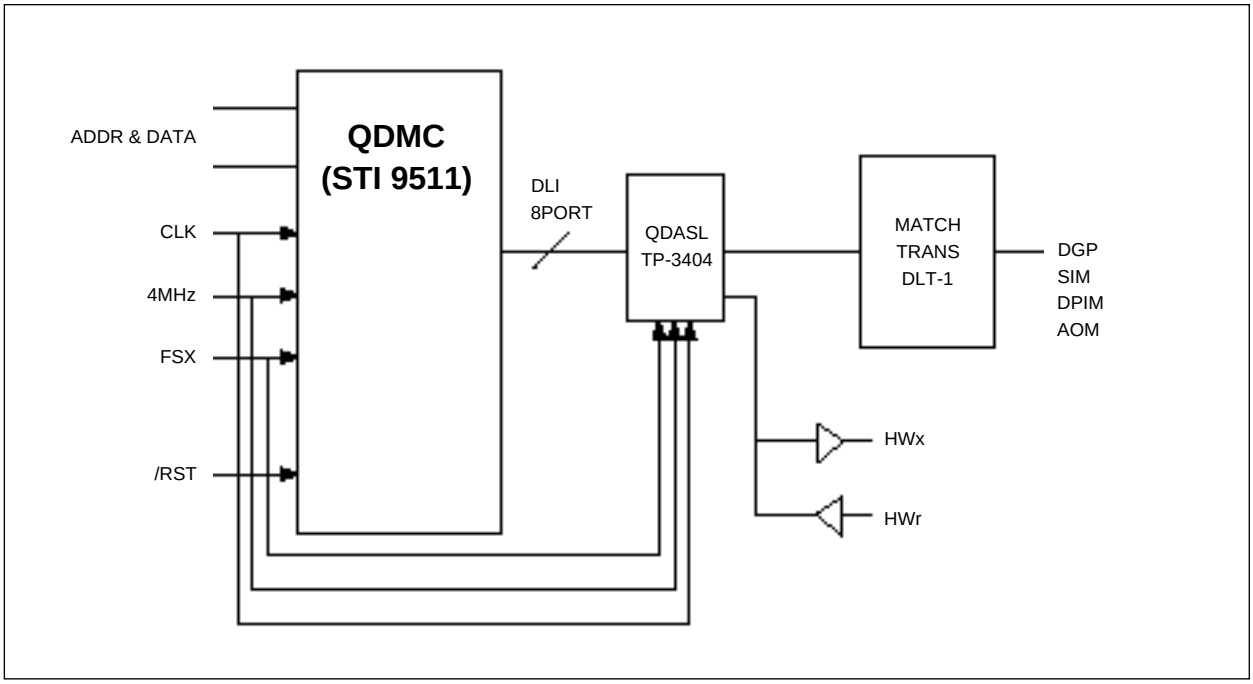
If the station user lift the handset when the phone is ringing, Relay K1 and K2 are released to finish the ring signal transmission. The pin 5 of HYB1 and 2 become high. TMC (U20) can detect the signal status.

2-7 8 DLI Card

It is option card required 8 digital extension lines. U1 (STI9511) controls 8 digital extension lines. The card contains the followings.

°‹DMC Interface
°‹DASL Interface
°‹DGP Interface

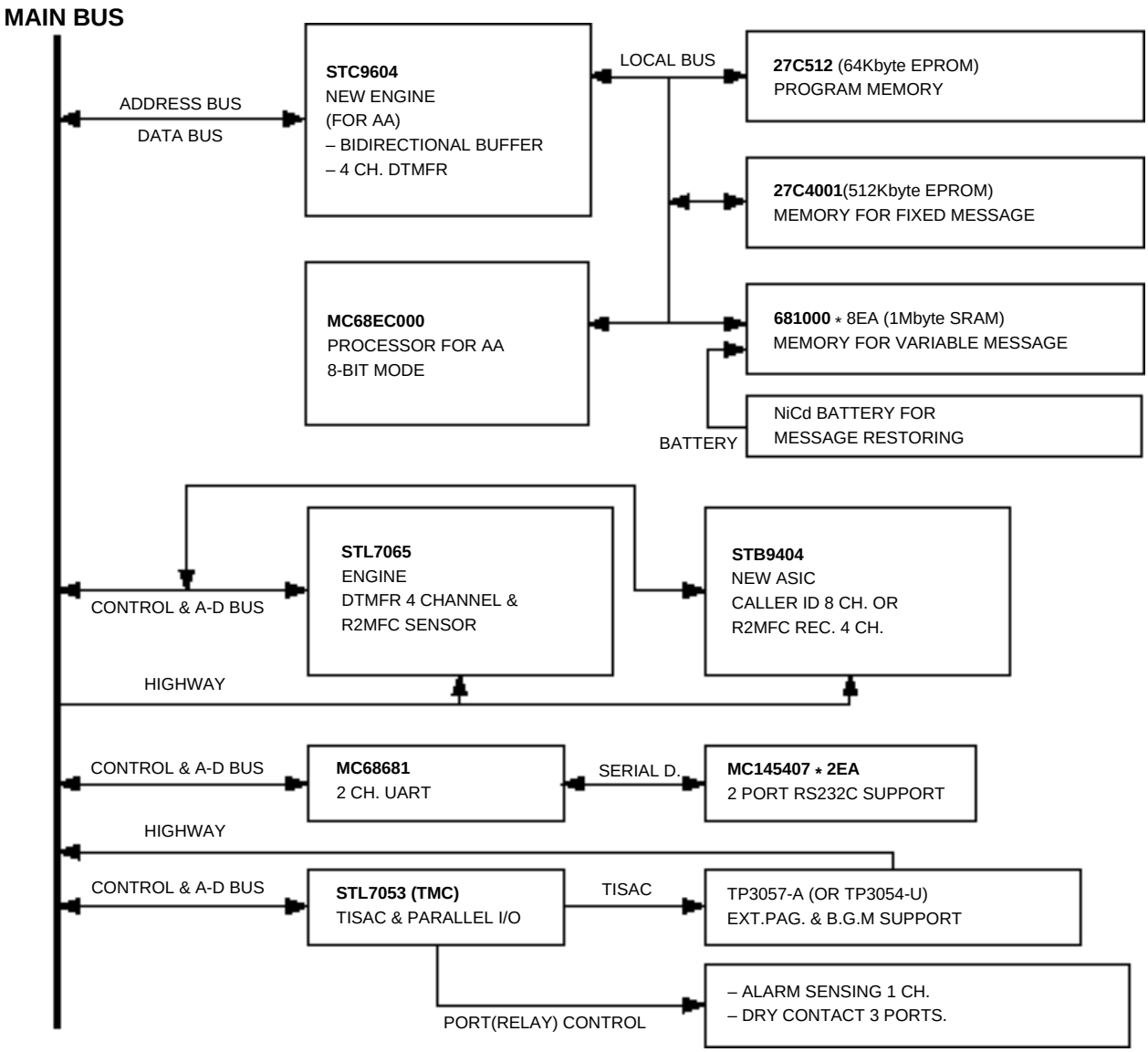
Block Diagrm



2-8 MISC Card

It has 2 kinds of card (MISC1, MISC2).
MISC1 Card performs many operation. – DTMF RECEIVER (4CH), RS232C PORT (2PORTS), MODEM (OPTION).
MISC2 Card performs menu operation. – DTMF RECEIVER (4CH), RS232C PORT (2PORTS), AA, MODEM (OPTION).

2-8-1 Block Diagam



2-8-2 Circuit Description

Dry contact

It is used to signal's ON/OFF for EXT.PAGING, BGM SOURCE or other purpose's ON/OFF. The 3 ports control ON/OFF and Mute Port (TMC) controls the 3 port.

ZONE 1 = MUTE 0 (WRITE 800000 D6)
ZONE 2 = MUTE 1 (WRITE 800100 D6)
ZONE 3 = MUTE 2 (WRITE 800200 D6)

DATA '0' = NORMAL OPEN
DATA '1' = RELAY ON

External MOH

There are External/Internal MOH Interface in the 008 base board. External MOH in the MISC board is prepared for 1 more port needed. External music source is supplied to the pin 6 and 38 of P3 connector in the MISC B'd through the pins 6 and 38 of P4 in the 008 Base B'd. Input impedance is matched to 600Ohms.
This circuit is divided by transformer, and output impedance is 600Ohm. Adjust gain with using OP - AMP and MOH LEVEL is –17dBm. The signal goes to the HWR0 though Codec, then switched at the T-switch of the 008 base board.

RS232C Interface

It is composed with RS232C DRIVER 2 PORT to communicate serial data for SMDR & PC MMC. MC68681 is used for UART. BAUD RATE can be changed from 75bps to 19.2kbps by S/W programming. Interface that reading DATA at the CPU is interrupt mode, and /WAIT signal is inserted to the CPU (in the 008base board) by DTARK SIGNAL that generated when control command is written. Interrupt level is main process's level 5, same as DLI SIO Rx INT. S/W can distinguish type whether SIO Rx or DUART.
(ref. MOTOROLA DATA BOOK for MC68682 SPEC.)
MC68681 is used as RS232 LINE DRIVER/RECEIVER IC, satisfied with EIA - 232D & CCITT V.28. Power of MC68681 uses +5V to the RS232C connection part, and 5V/GND to the logic circuit. Internal Logic is made up of Inverter. If output data of MC68681 is low, outputs +3.9V (3.5 min, RL = 3KOhm), but if high, output –4.3V (–4.0V min, RL 3kOhm) to the connection port.

When data is inserted from external device, 1.80V (1.35V min) is operated as Input Trun On Voltage (low input to the MC68681) and 1.0V (1.25V max) is operated as Turn Off Voltage (high input to the MC68681).
Both of 2 ports (RS232C connection) is 9 pin connector (DB9).

PIN NO.	1	2	3	4	5	6	7	8	9
FUNCTION	DCD	RXD	TXD	DTR	GND	(N.C)	RTS	CTS	(N.C)

Serial Interface Port Pin Description

4 Channel DTMF Receiver

Engine (STL7065) is used to 4 channel DTMF receiver, and used to only DSP (for DTMF). See the 008 base board circuit description for the DTMF receiver.

4 Channel Automatic Attendant (A.A)

The circuit performs auto attendant that provides automatic answering of incoming calls, presentation of choices to the caller, and connection to extensions based on those choices.

– A.A Feature

°‹A Number of Channel : 4 Channel
°‹AA Recording time : (120sec Recording Regeneration +60sec Regeneration)/Channel
°‹A Number of AA DTMF Receiver : 4 Channel
°‹Processor : 68EC000 FN16
°‹AA Memory Size : SRAM 1M ®MVoice data and program
EPROM 512K ®MVoice data
EPROM 64K ®MProgram memory
°‹IPC with main memory : using 2 latch of 1 byte in the STC9604
°‹RECORDING DATA BACKUP : Using 3.6V NiCd battery
°‹It is possible to record with BGM port in the 008Base board and hanset

Internal Address Map

ADDRESS		SIG NAME	READ	WRITE	REMARK
00XXXX		ROEN1B	27C512 CEB, 64KB Program ROM		
08XXXX	08XXXX	RE0B	KM681000 CS1B		128KB SRAM Working£´ AA registration
	0AXXXX	RE1B	KM681000 CS1B		
	0CXXXX	RE2B	KM681000 CS1B		
	0EXXXX	RE3B	KM681000 CS1B		
10XXXX	10XXXX	RE4B	KM681000 CS1B		128KB SRAM AA fixed Data
	12XXXX	RE5B	KM681000 CS1B		
	14XXXX	RE6B	KM681000 CS1B		
	16XXXX	RE7B	KM681000 CS1B		
18XXXX		ROEN2B	27C512 CEB, 64KB VM ∞Ì¡§Data		
20XXXX		DSPCEB	AAMODE DTMF RCV Control1		
28XXXX	28XXXX	SRENB	HWP 8Bit RD ENB	£ ≠	
	2A0XXX	WEB0	£ ≠	HWX P2S LOADB	
	2A4XXX	WEB1	£ ≠	HWX P2S LOADB	
	2A8XXX	WEB2	£ ≠	HWX P2S LOADB	
	2ACXXX	WEB3	£ ≠	HWX P2S LOADB	
	2B0XXX	WEB4	£ ≠	HWX P2S LOADB	
	2B4XXX	WEB5	£ ≠	HWX P2S LOADB	
	2B8XXX	WEB6	£ ≠	HWX P2S LOADB	
	2BCXXX	WEB7	£ ≠	HWX P2S LOADB	
2CXXXX		AASWRSTB	£ ≠	AASWRSTB	
2EXXXX	2E0XXX	AIPCWRB	£ ≠	AA IPC WR ENB	
	2E4XXX	AIPCRDB	£ ≠	£ ≠	
	2E8XXX	AACHB	CDENB of TMC		
	2F4XXX	AIPCSTRDB	AA IPC STATUS RD ENB	£ ≠	
	2F8XXX	AIPCSTSETB	£ ≠	AA IPC STATUS WRB	CPM READ This Status
	2FCXXX	INTSETB	£ ≠	Stimulate AA INT Signal	
30XXXX		DSPEN1B	DSPMODE STL 7065C Control		
38XXXX		DSPEN2B	DSPMODE STL 7065C Control		

CPM CPU to AA ADDRESS MAP

ADDRESS		SIG NAME	READ	WRITE	REMARK
0F2000		CIPCRDB	CPM IPC RD ENB	£ ≠	
F2080		CIPCWRB	£ ≠	CPM IPC WR ENB	
F2100		CDIDB	AA Card ID RDB	£ ≠	CPM CPU Read The ID of AA B°Ød when this signal is low
F2180		SVALIDB	CPM IPC STATUS RD ENB	£ ≠	

Caller ID (USA only)

The circuit offers function that detecting caller ID with C.O signal and transmitting it to the main processor with data.
PCM highway is enable to 8 port to analysis Caller ID's data, Generates Time Slot matched with corresponding channel in the internal TISAC, then stores it in the PCM DATA STORE REGISTER and at the same time, informs it to the CPU by interruptting the Int1 port of DSP Core. CPU resets DSP and then downloading. Because program that operates DSP core in the CPU must be stored at internal 2K WORD RAM. If it is done completely, turned download enable signal to LOW and then operate DSP in succession.

DSP prepares to receive caller ID data with port enable signal that CPU writes, and read each port data that is in the PCM DATA STORE REGISTER when 8KHz interrupt occured. Analysis that is '1' or '0' and if DSP writes the results unconditionally at each port's double buffer RAM, CPU polling each 20mSec whether occurs READY or not, if occured READY, read 8 byte data to the BURST immediately.
Error flag is occured when CPU didn't access during 8.33m*16=129.28mSec and Caller ID is invalid. And there are flags of sync, mark data, DSP receive end for each data in the DSP program.

ALARM SENSING

It is possible to detect ON/OFF with TMC PORT under the condition that they are connected between ON/OFF connection port for external sensing and system through MDF.

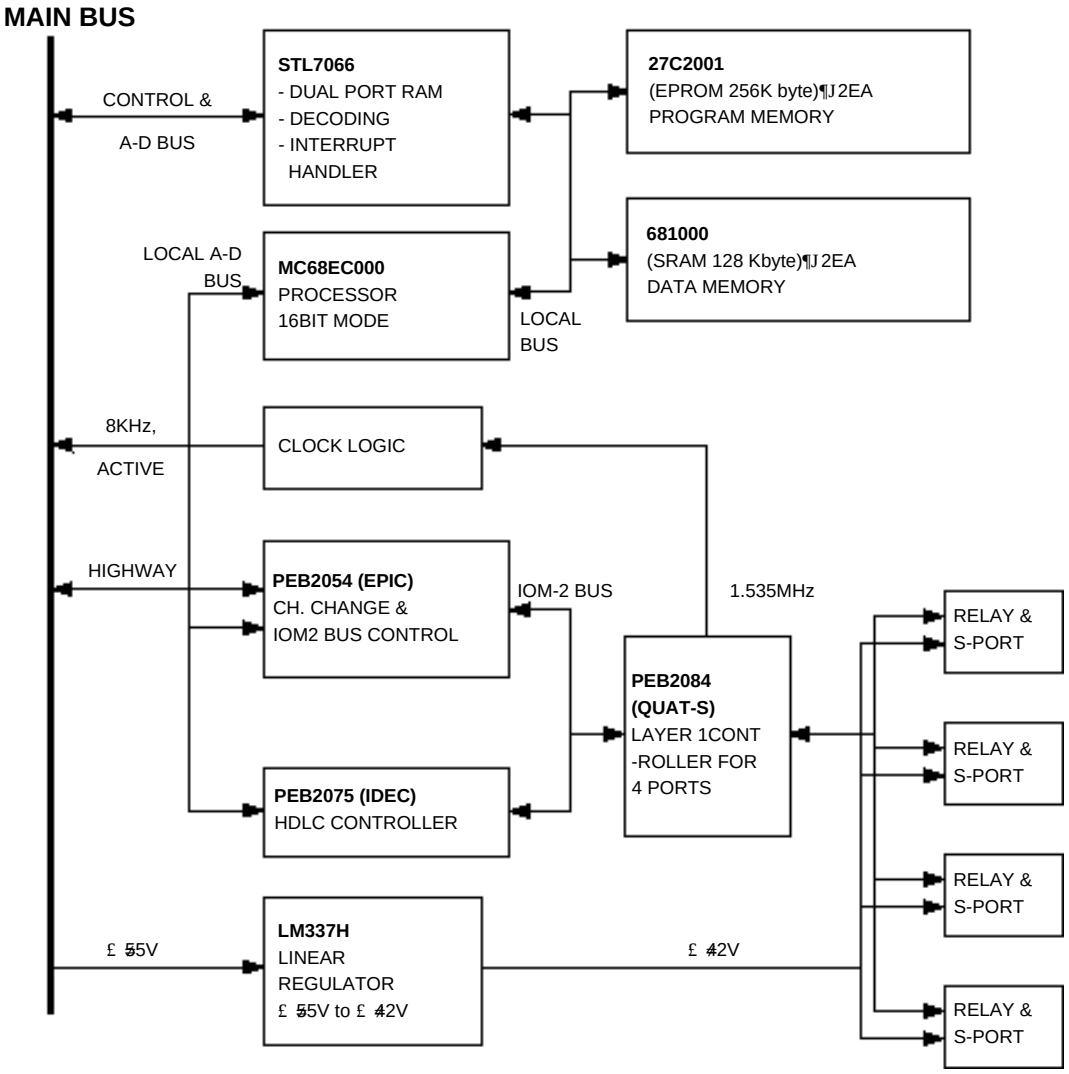
METGNE 0 = '1' : DETECT
= '0' : IDLE

2-9 SOTO Board

– Support 4 Port (Each port : 2B + D) ISDN Basic Rate Interface
– Possible to operate as TRK (TE mode) and Line interface (NT mode)

°‹ Include 4 port
°‹ Interface between PCM HIGHWAY in the key - system and each channel of ISDN
°‹ Tx/Rx signal and control information between EURO - ISDN S INTERFACE and KEY-SYSTEM
°‹ Supply network SYNC signal to the KEY-SYSTEM CLOCK GENERATION PART
°‹ Support available space to store code and use data

2-9-1 Block Diagram



2-9-2 Memory map

BASE£´0X1F,FFF~ BASE£´0X10,000	READ	CARD IDENTIFICATION
BASE£´0X1F,FFF~ BASE£´0X10,000	WRITE	D0/RESET D1/LSA9 D7/LSA10
BASE£´0X0F,FFF ⋮ BASE£´0X00,000	READ	DPRAM #4 DPRAM #3 DPRAM #2 DPRAM #1

[Table 1.] Memory map for keystem side

HEXADECIMAL ADDRESS	MEMORY MAP
0X600,000£ ¢0X6FFF,FFF	UNUSED
0X5E0,000£ ¢0X5FF,FFF	SIO
0X5C0,000£ ¢0X5DF,FFF	EPIC(2054)
0X5A0,000£ ¢0X5BF,FFF	IDEC(2075)
0X580,000£ ¢0X59F,FFF	DPRAM
0X560,000£ ¢0X57F,FFF	UNUSED
0X540,000£ ¢0X55F,FFF	RESET LATCH D13-IDEC/EPIC RESET(L) D12-QUATS RESET(L)
0X520,000£ ¢0X53F,FFF	WATCHDOG
0X500,000£ ¢0X51F,FFF	LED
0X420,000£ ¢0X4FF,FFF	UNUSED
0X400,000£ ¢0X41F,FFF	SIGNAL LATCH D13 £ ¬CONFORM BIT(L) D10 £ ¬WATCHDOG DISABLE(H) D9 £ ¬ENABLE 8KHZ(H) D8 £ ¬1 ACTIVATE(H)
0X280,000£ ¢0X3FF,FFF	UNSUED
0X240,000£ ¢0X27F,FFF	SRAM(DATA MEMORY)
0X100,000£ ¢0X23F,FFF	UNUSED
0X080,000£ ¢0X0FF,FFF	ROM(EXPANDABLE)
0X000,000£ ¢0X07F,FFF	ROM(CODE MEMORY)

[Table 2.] Memory for card side

2-9-3 Circuit Description

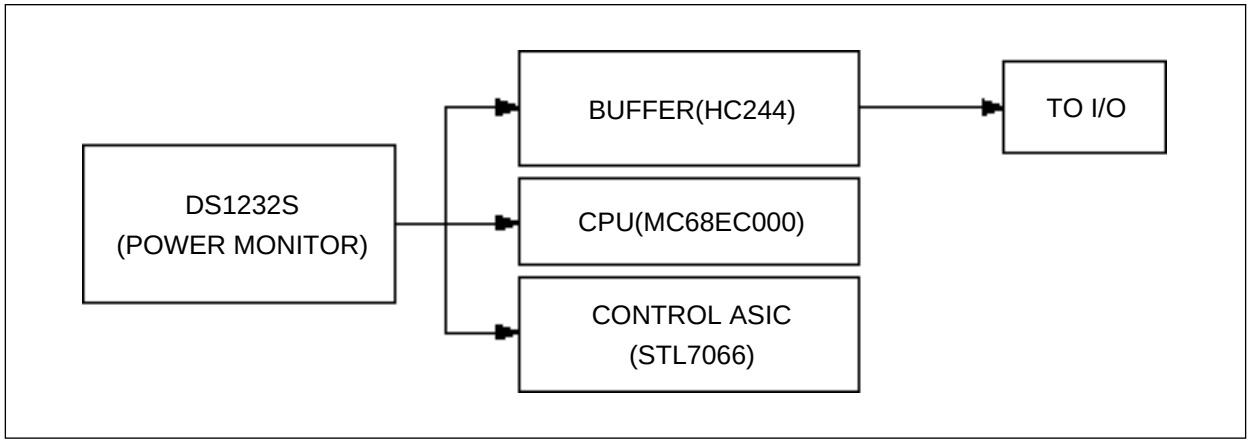
Control Part

CPU (MC69EC000)

MC68EC000 used in this card is emphasized on cost. It is operated under 16 bit operation mode and 16.384MHz clock speed. It can control the control BUS, but external processor can't.

Reset Logic

DS1232S is used in reset logic. DS1232S displays input voltage and supply reset-pulse to the input/output circuit that is related with CPU. It performs watchdog. When Falling Edge is not generated during 60mSec, DS1232S generates reset - pulse. During initial feeding power time, can't watchdog with H/W method. After H/W initialation, D10 in the 0X400,000 address turned to high is possible to watchdog. After in this time, Falling dege is occured, whenever access 0X52000 address. CPU reset and halt are composed of OPEN DRAIN output matched with electric characteristic, and connected with CPU, BUFFER, and CONTROL ASIC.



The reset logic for EURO-ISDN S interface trunk card

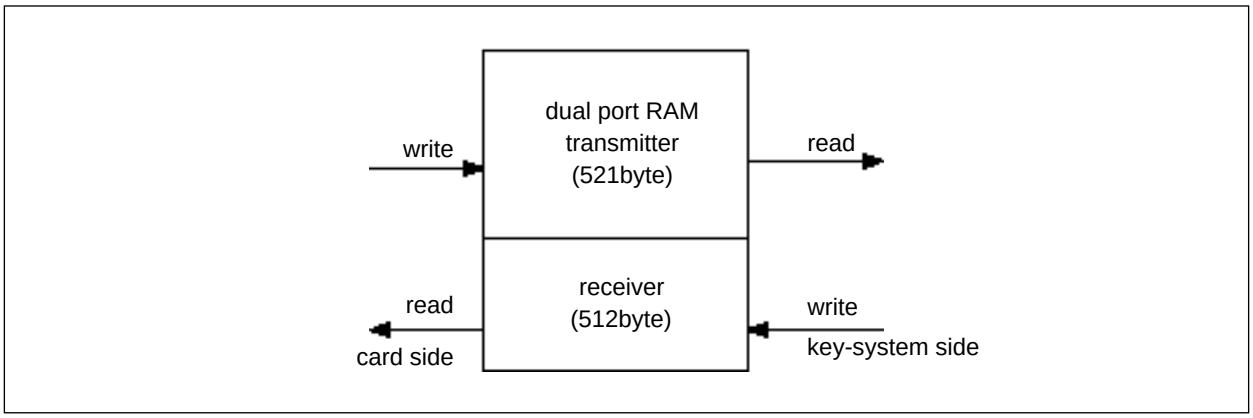
Control ASIC (STL 7066) Interface

All the peripherals connected with external memory to Tx/Rx are used to CONTROL ASIC 7066. Basic function used in control ASIC is as follows.

– Address decoding for the generation of memory chip - select signals
– Address decoding for the generation of I/O chip-select signals
– Interrupt control and priority encoding for CPU
– Communication between signalling processor and internal processor at the key - system using internal DPRAM

MODE CHARACTERISTIC : IMODE of control ASIC is pulled high. So, internally, SIO can't be used and SIO pin is used to decord signal.

DPRAM (dual port ram) : DPRAM IS MEMORY ALLOCATED FOR INTERNAL PROCESSOR COMMUNICATION.
It is 1024byte size for 512 byte Tx buffer and 512 byte Rx buffer.



DPRAM Structure for EURO-ISDN S interface trunk card

INTERRUPT : LEVEL 7 … NON-MASKABLE INTERRUPT USED IN DEBUGGER
LEVEL 6 … IDEC INTERRUPT FOR D CHANNEL MESSAGE AND CIC (COMMAND AND INDICATION) HANDLER
LEVEL 5 … EPICS INTERRUPT FOR THE CONTROL OF MONITER CHANNEL BETWEEN EPIC AND QURT-S
LEVEL 4 … 1mSec INTERVAL TIMMER INTERRUPT FOR PERIORITY TASK GENERATION
LEVEL 3 … INTERRUPT FOR PROHIBITED MEMORY-ACCESS
LEVEL 2 … SIO INTERRUPT

INTERNAL LATCH : Internal latch allocated at 0x540,000 address is used to Reset Latch - Signal
ADDRESS DECODING : Chip select signal which decoded in the control ASIC transmit to the memory and input/output device.

Control–signal latch for I/O interface

Control signal is needed to communicate between input/output device and CPU.
– D8 (layer 1 activated) : This bit indicates layer 1 status whether it is available or not.
– D9 (enable 8KHz) : It is start bit of 8KHz generation logic to sync with received signal from line.
– D10 (conform bit) : If this bit is high, card is Power-On-Reset status. But if this bit is low, 1KHz generated in the key-system is supplied continuously, and periodic port access is not necessary.
– D13 (confirm bit) : This bit is used for stopping offerred frame sync.

BRI (Basic Rate Interface) part

4S0T0 Card has 4 ports-BRI, and BRI is composed with 2 B-CH (64kBPS voiceband), call channel, and 16kBPS D-Ch for signalling.

EPIC-S (PEB 2054, Extended PCM interface controller-small)

EPIC is switching element for control the path 4¶J24channel.
To control path, EPIC-S switchs serial interface between PCM highway and IOM2.
Capacity of EPIC-S (in the 4S0T0 card) is as follows.
– Interface between PCM HIGHWAY OF KEY-SYSTEM AND IOM2 (SIEMENS ELEMENT)

– B-channel interface between interfaces of 4 S-interface network lines.
– Monitor channel control for the access of QUAT-S.
– For interface of key-system using Tri-state control, receive selected 1/2 of PCM HIGHWAY. (FIRST 16 CHANNEL AND LAST 16 CHANNELS)

IDEC (PEB2075. ISDN D channel exchange contaoller)

IDEC has 4 channel HDLC FIFO for Tx/Rx layer2 information through D-channel. This element controls call control and signal information of D-channel.
– D-channel FIFO handling for layer2 function of four port (each channel has 1 D-channel)
– Command and indication handling for the state control and monitoring of layer1, physical condition in QUAT-S.

QUAT-S (PEB2084, Quadratic tranceivers for S/T interface)

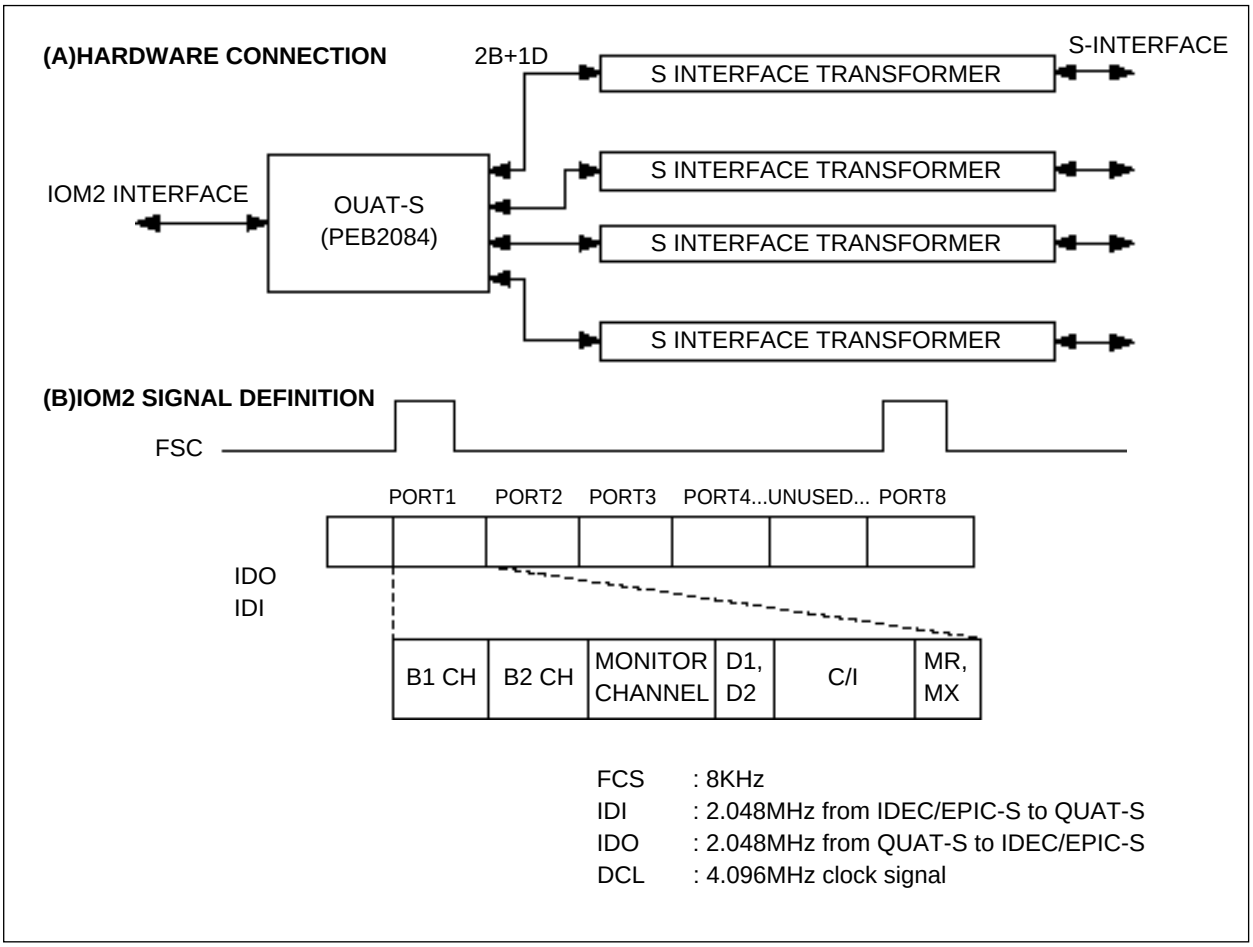
QUAT-S is phsical Rx/Tx device for 4 channel, and it satisfies standard I.430 of layer 1 which is standard access unit of ISDN.
– 4¶J2B+D subscriber Rx/Tx interface capacity
– IOM2 INTERFACE
– Support JTAG (Join Test Action Group) boundary scan test
– CMOS element of low comsumtion power

Operating of BRI interface element

Interface is designed on the basis of IOM2 organized with special disign element (EPIC, IDEC, QUAT-S) for multiple port. Physical interface (layer1) about I.430 standard Framing (2B+D) is formed by PEB2084 (QUAT-S), interface about LAPD PACKETIZING is formed by PEB2075 (IDEC;ISDN D-CH exchage controller). Data path & switching for voice channel is formed by PEB2045 (EPIC-S;extended PCM interface controller small). Connection among QUAT-S, EPIC and IDEC is described at the Block Diagram. (2B+1D) Channel about each port of QUAT-S is possible to communicate from S Interface to IOM2 Serial interface. QUAT-S has various 4 BRI interface at the 1 IOM2 serial communication interface. IOM2 serial interface is designed by SIEMENS, and its speed is fixed as 2.048MHz in the EURO-ISDN S INTERFACE TRUNK CARD. IOM2 interface has 32 channel of 64kBPS. Each port has 4 CH among 32 CH in the IOM2 HIGHWAY (IDP0, IDP1), 4 CH are composed with 2 B-CH, 1 D and 1 command/indication handling, MONITOR CHANNEL PROTO among QUAT-S, IDEC, EPIC. Consequentely, 1 card uses 16 channel of each 64kBPS. Each D-CH from IOM2 communicates

with IDEC that has 4 independant FIFO with layer2 operation. Command and state of physical layer1 is indicated by IDEC C/I(command and indication). C/I channel reports interrupt level when state is changed at physical line.

Each B1, B2 channel is transmited for switching B-ch between QUAT-S and EPIC-S from QUAT to EPIC-S throgh IOM2 serial interface. EPIC-S switchs each B-channel between IOM2 and PCM HIGHWAY. IOM2 is serial interface to the S-interface line, and Highway is interface for key-system B-channel. Connection memory and data memory is for assigning PCM highway and each time band. Monitor channel is Control and Response Channel for EPIC-S can control bidirectional control register(QUAT-S CONTROL REGISTER).



Interface between IOM2 and fore port of S interface IDEC/EPIC

Key-system interface part

Key-system interface part has 2 important capacity. One is DPRAM. DPRAM performs internal process interface between CPU of card and SP(signal processor) of key-system. Card transmits data about call control message and card array with D-channel. Key-system transmits data about call control message and card array, too. This message controls BRI card to use its own digital signal.
Second capacity is B channel interface and switching between IOM2 B CHANNEL and HIGHWAY B CANNEL.
These capacity are performed at EPIC-S.

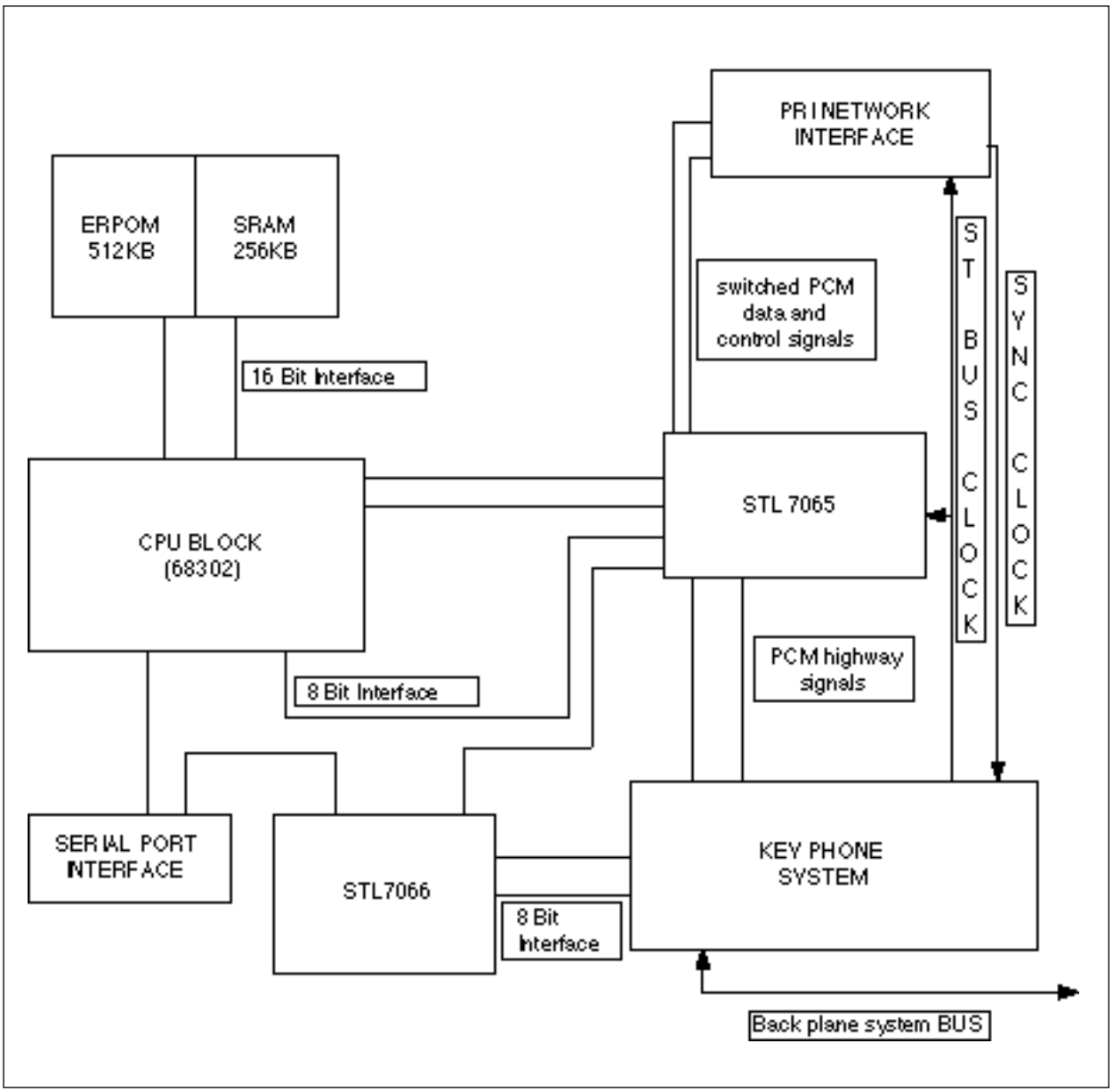
System clock interface

BRI card is BRI trunk card installed at LT-T mode. So, Clock from BRI line is used as standard clock of system.

2-10 PRI Card

– CPU AND MEMORY
– KEYPHONE SYSTEM INTERFACE
– PCM DATA HIGHWAY INTERFACE
– PRI NETWORK INTERFACE

2-10-1 Block Diagram



2-10-2 Memory Map

RESOURCE	ACCESS TYPE	ADDRESS RANGE	SIZE	BUS WIDTH
EPROM	R	0000000 – 007FFFF	512KB	16BIT
RAM	R/W	0080000 – 08007FF	256KB	16BIT
MAIN ENGINE	R/W	0800000 – 08007FF	–	8BIT*
IPC MEMORY	R/W	0580000 – 05807FF	1KB	8BIT*
LED PORT	W	0500000	–	8BIT*
SERIAL PORT	R/W	05E0000	–	8BIT*

CPU AND MEMORY

CPU(MOTOROLA 68302, 16BIT) : Motorola 68302 has 68000 capacity and Communication between Processor capacity.

Reset Logic

DS1232s(the power monitor and the reset circuit) is used as Reset logic. DS1232s indicates input voltage level and 1KHz clock input, and offers Reset Pulse to the CPU and I/O. If 1KHz clock input is not inserted during 600msec, DS1232s resets system automatically. The other source of reset is CDRST and SRST generated from keyphone system.

2-10-3 Keyphone system interface

Control ASIC(STL7066) Interface

Refer to STL7066 manual for detailed explanation. In this document, Needing usage will be described.

– STL7066 has capacity as followings.

a. Chip select generation for serial port and LED access.
b. Interrupt control and priority encoding.
c. 1024 byte dual port memory resource for the CPU and the signal processor in K/P system
d. CPU cycle termination

– DPRAM(dual port memory)

The DPRAM is very sensitive memory, it is used to communicate between processor. DPRAM is divided by 2, one is used as received buffer, the other is used to transmitted buffer.

Address decoding

CPU needs interface with SRAM, EPROM, STL7066, STL7065 and serial port. Selection signal between SRAM and EPROM CHIP is generated from 68302. Decoding of STL7066, 7065 is achived at the internal ASIC, and serial port chip selection signal is generated at the STL7066.

Interrupt

4 kinds of interrupt are available. 3 kinds of interrupt is coded in the STL7066 ASIC CHIP, and decided priority. The other one is generated by the internal factor of 68302.

Interrupt source priority is as follows.

1)LEVEL7 : NMI, USED IN VME DEBUGGER
2)LEVEL4 : INTERNAL HDLC CONTROLLER
3)LEVEL3 : 1mSEC Interval Timer Interrupt for Periodic Operation.
4)LEVEL1 : SIO(SERIAL IO) INTERRUPT

2-10-4 PCM Data highway interface

PCM Highway is composed of PCM TRANSMIT DATA(DSI), PCM RECEIVE DATA(DSO), SC2B, SC4B, SFOB. STL7065 is used as Time Switch.

2-10-5 PRI Network Interface

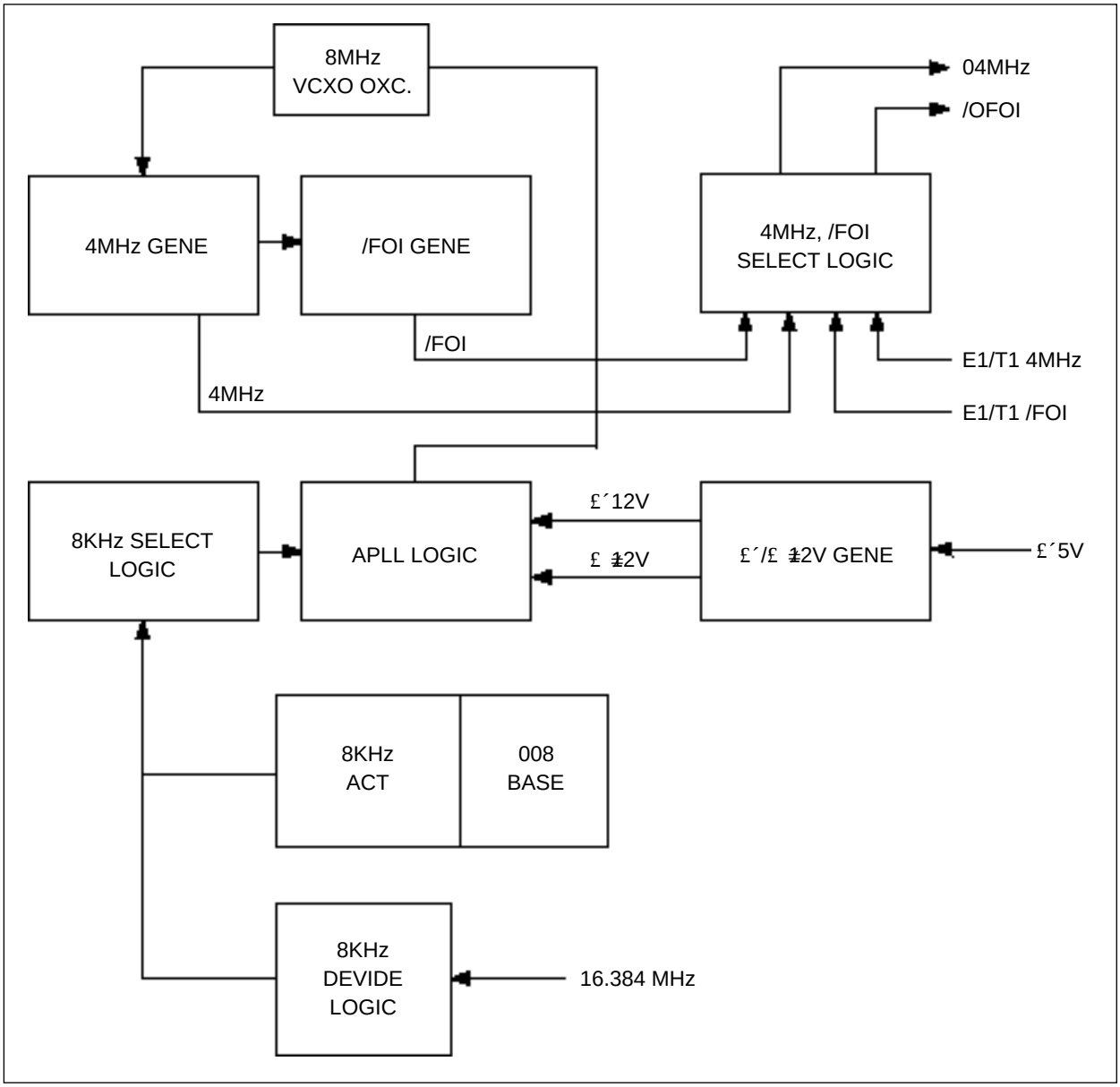
PRI NETWORK INTERFACE is composed of MT89790B, Tx/Rx Converter and MH89791(CEPT PCM 30 TRANSMITTER EQUALIZER). MH89790B support interface between 2.048kBPS DIGITAL TRUNK and MITEL'S SERIAL TELECOM BUS(ST-BUS).
ST-BUS is composed of three control line, two transmit and rceive data line, frame sync, 2MHz and 8MHz clock.
CSTI0, CSTI1, CST0 is control line. CSTI0, CSTI1 is input of chip received from time switch STL7065. CST0 is input from CHIP to STL7065.
Rx/Tx PCM data is composed of 30 B-Channel, 1 D-Channel and control channel. Each channel is 8 bit and 64kBPS. Time slot 0 is control channel and time slot 16 is D-channel. PCM transmition line from keyphone system is connected to the TIME SWITCH. D-channel is inserted to the TIME SLOT 0 by 68302.
Impedance of receive line is made to 75Ω or 120Ω by using jumper JP14.

2-11 PLL

2-11-1 General Description

PLL B'd is composed of circuit that is for locking 8KHz sync signal generated at the BRI or PRI B'd used, and generates 4M clock and FOI for being used as reference clock to realize Multi-slot ISDN B'd of DCS COMPACT II & COMPACT II PLUS System.

2-11-2 Block Diagram



2-11-3 Circuit Description

APLL(Analog phase locking logic

APLL part receives devided 2kHz from 8kHz select logic Part, 8kHz select logic part selects that, 8kHz comes from ISDN (BRI, PRI) card equipped in each slot of 008 Base B'd, and devided 2kHz from 8.192MHz VCXO Oscillator. It is used to supply to the CA3410 and the output of CA3410 is inserted to the 8.91MHz VCXO Oscillator as reference value to oscillate. It is possible to supply 4MHz to the whole system by dividing oscillation frequency with 2, and used as sync clock of whole system.

8KHz Select logic part

In the COMPACT II and the COMPACT II(PLUS) system, BRI B'd at the universal slot, E1 and PRI at the 4th expansion rack can be installed. The highest priority B'd clock is used to sync. clock of the whole system. 74HC148 is used to priority encoder.
Priority is that PRI or E1/T1 in the 4th expansion slot is highest and from left side in the universal slot is high.

4MHz, /FOI select logic part

When digital trunk card(E1) is installed in expansion rack 4th slot, 4MHz and /FOI which are supplied from digital trunk card(E1) is used as sync clock through whole system by setting T1 DET as high to the 74HC4053. When ISDN card is installed, T1 DET is changed to low, and 4MHz and /FOI is supplied to the engine.

4MHz, /FOI Generation

Generates 4MHz by dividing (by 2) output of 8.192MHz VCXO OSCILLATOR synchronized at the reference ISDN card, and /FOI by dividing output of 8.192MHz VCXO OSCILLATOR synchronized at the reference ISDN card and then supplys to 4MHz/FOI SELECT LOGIC.

+/–12V Generation

+12V is made by +12 exclusive DC/DC converter(LT1108) with supplied +5V and -12V is made by common DC/DC converter(MC34063), and then supply it to the CA3410. It is possible to improve performance.

– – If New engine(STC9604) is used, BRI card uses internal DPLL in the engine, so it is unnecessary to use a PLL option board. because of internal DPLL in the engine is not so good in respect of accuracy. So, if PRI or BRi card is used, then PLL option board is needed.

2-12 Ringer B'd

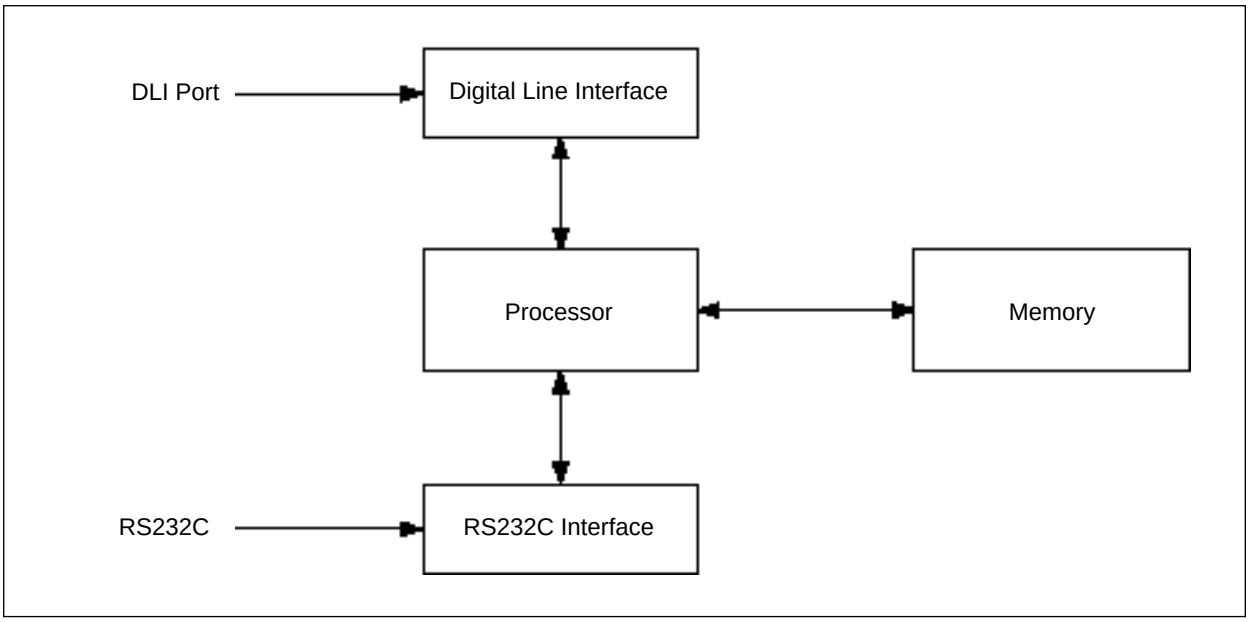
Ringer B'd generates sine wave ring signal and provides it to single line telephone. It is composed of Wein bridge oscillation part, and amplification.

2-13 SIM Module

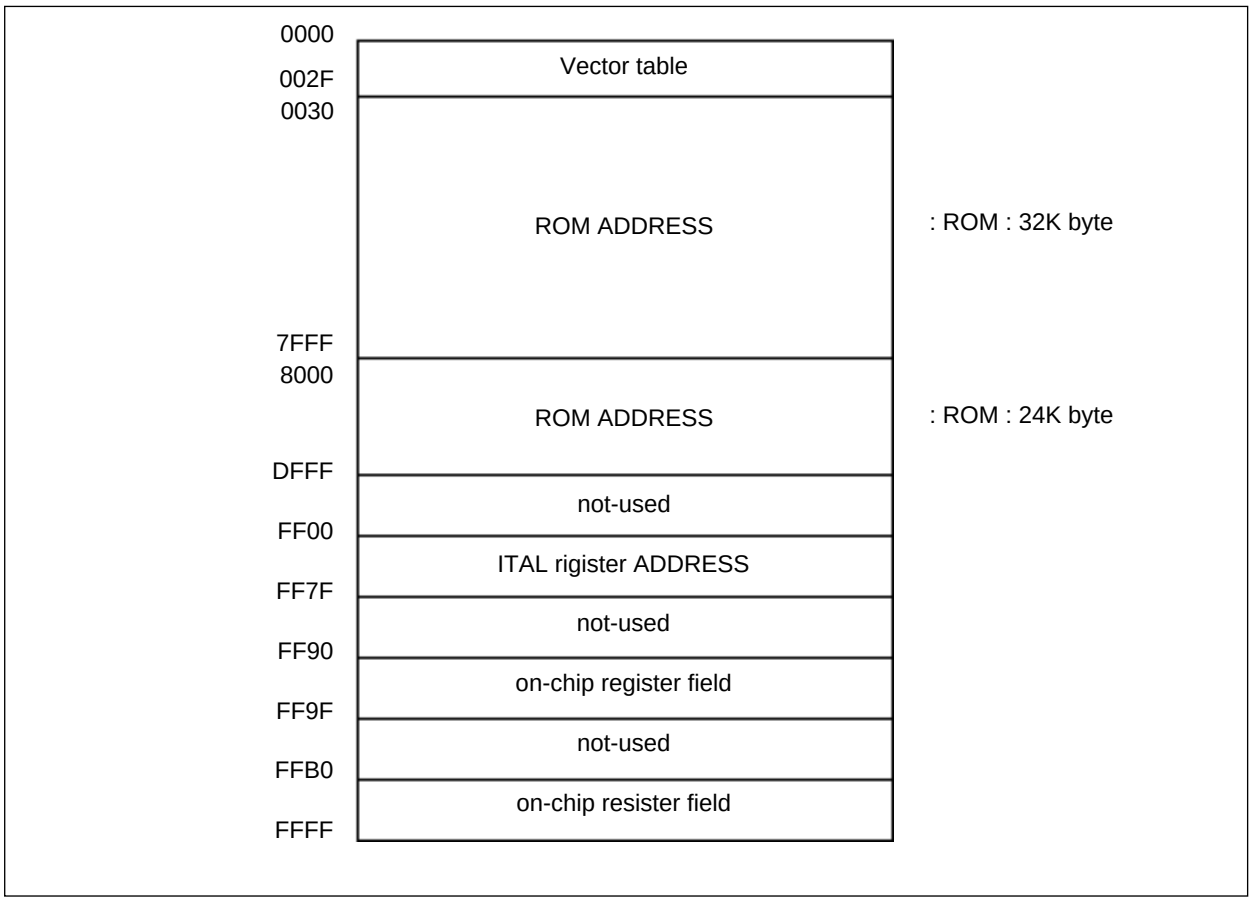
2-13-1 General

SIM is the interface for digital line and data. One data terminal can be connected to one SIM.

2-13-2 Block Diagram



2-13-3 Memory Map



Port 7 Pin function

P70	P71	P72	P73	P74	P75	P76	P77
RESERVED	RESERVED	RESERVED	RESERVED	/AS	/WR	/RD	/WAIT
				OUTPUT	OUTPUT	OUTPUT	OUTPUT

P7DDR = 0 x FF

P7DD4 = 0 x FF

2-13-4 Circuit Description

Serial Communication Interface

H8/325 has 2 serial communcation Interface module. SCI is used to transmit and receive D-channel signalling data between processor and DASL. It contains the following:

°‹Communication mode : Asynchronous mode
°‹Data length : 8bits
°‹Parity Even
°‹SCI Input / Output pins
°‹Serial clock SCK0=32k
°‹Serial Receive data RxD0=DASL DR
°‹Serial Transmit data TxD0=DASL DX

RAM

SIM uses external RAM while H8/325 uses 1kbyte RAM of internal on-chip memory.

°‹RAM size : 24kbyte RAM
°‹RAM enable bit (RAME)

To enable the external memory, on-chip RAM should be disabled and RAME bit should be set.

RAME

0	on-chip RAM is disabled
1	on-chip RAM is enabled

ROM

32kbyte internal ROM is used. To enable the internal ROM, assign the operating mode 2. ITAC is installed in the data terminal and DASL. It converts the data from terminal to be proper for ISDN protocol according to rate adaptation.

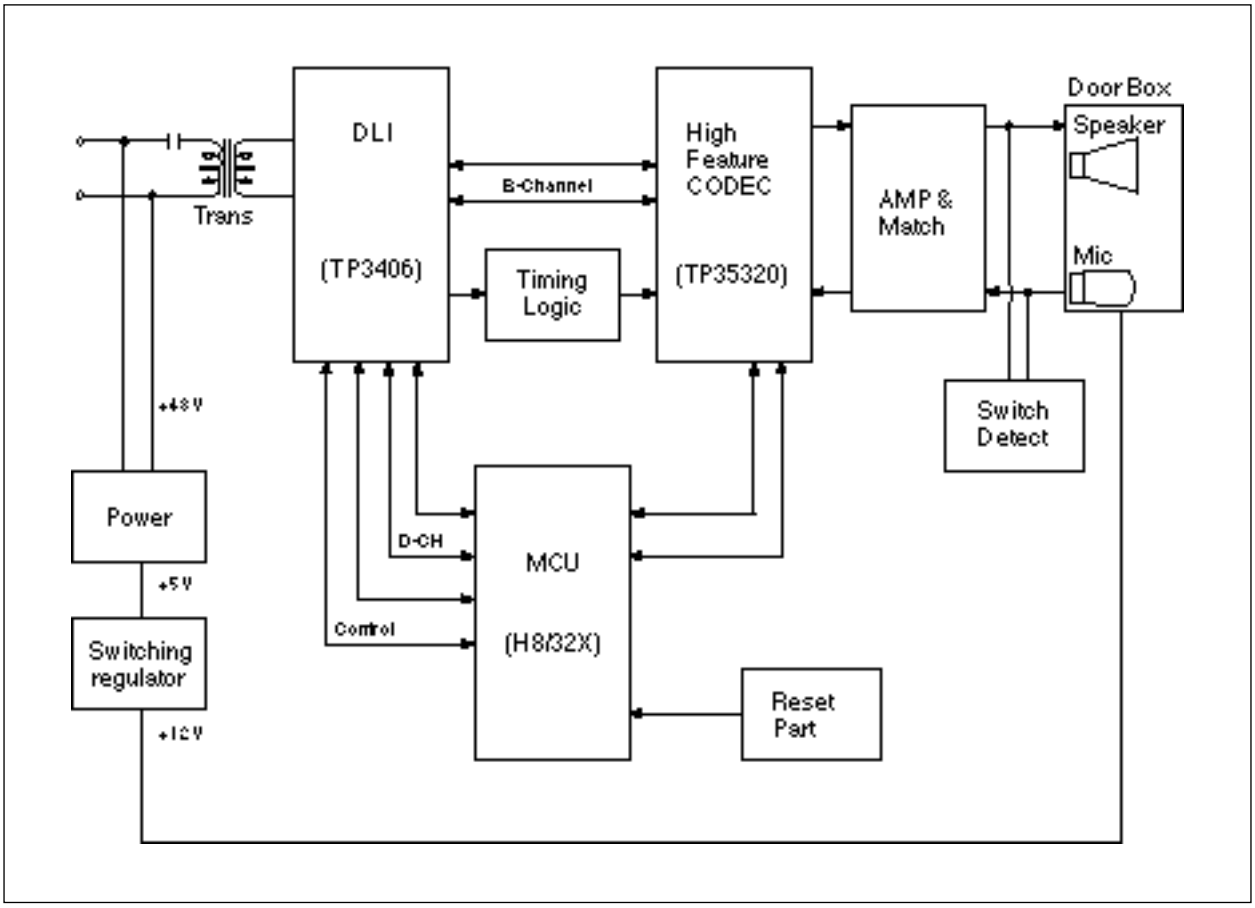
Mode	MD1	MD0	on-chip ROM
2(expanded made)	1	0	Enabled

2-14 DPIM Module

2-14-1 General

DPIM converts the digital signal from digital keyphone to analog signal to communicate with the analog door phone. The allowable distance between DPIM and main system is of 400m. It is a maximum of 200m between DPIM and the door phone, and a maximum of 600m between the main system and door phone.

2-14-2 Block Diagram



2-14-3 Circuit Description

The DPIM(Digital Door pnone interface Module) uses the door box (which has been used for the 816 analog keyphone and speaker). DPIM converts the digital signal form digital keyphone system into the analog signal to send to the door box, and sends the analog signal from the door to the digital keyphone system after converting to digital signal.

Amplifier and Matching

The analog signal out from HFC and door box is amplified at TL084. TL084 is equipped with 100kOhm for input resistance.

T5692, the same one equipped in the door box, is used for matching transformer. 1kOhm(R14) resistance guarantees the best transmission quality, and 100kOhm (R9, R10) is used for blance resistance to prevent the speaker input signal from flowing to MIC input pin 19 HFC.

Door Locker Control

Door locker can be installed in DPIM. Relay switch is used to open the door, P10 (pin 48) in MCU is the relay control port, Which is the key scan port in the digital phone. D6(IN4148) is to get rid of the opposite electric power generated at the relay, and capacitor and resistor is used to bypass the spark generated at relay contact.

Switch Detect

A push switch in the door is used by a visitor to call the one inside. DPIM detects whether the switch is pushed or not with photo coupler, and supply the signal into the MCU port 46(pin 15)/ The MCU sends the data in a format of serial data to TP3406 U5 through D channel. The main system transmits the signal to the preassigned port to connect the visitor to the user inside.

The switch detect signal consists of two lines because it is transmitted through the center tap of matching transformer. Even though +5V is fed to the transformer, it does not damage the transformer.

+12V Generator

+12V power with 5Vp.p (+5V reference) should be supplied to the OP amp(TL084). The step up DC to DC converter (LT1109, U11) is used to generate +12V output from +5V input with simple peripheral circuit.

2-15 Digital Keyset

2-15-1 General

The digital phone exclusively designed for DCS COMPACT II(PLUS) system provides a lot of serivices. A digital phone equipped with LCD shows up to 32 letters message through the 2 line x 16 letters LCD display in front of the phone.

A digital phone without LCD performs the same function as the LCD phone except the LCD-related features. And a basic phone basically performs the same function compared with the LCD phone except no LCD display and less function keys.

The Add On Module (AOM) device has 48 DSS keys, LED display.

LEDs are attached in all the function keys and the programmable keys on the LCD phone. Dual color LEDs (red & green) are used. However the AOM uses only a red LED.

The allowable maximum distance between the main system and the digital phone is 400m. 2 line twist pair is used and connected with modular jack.

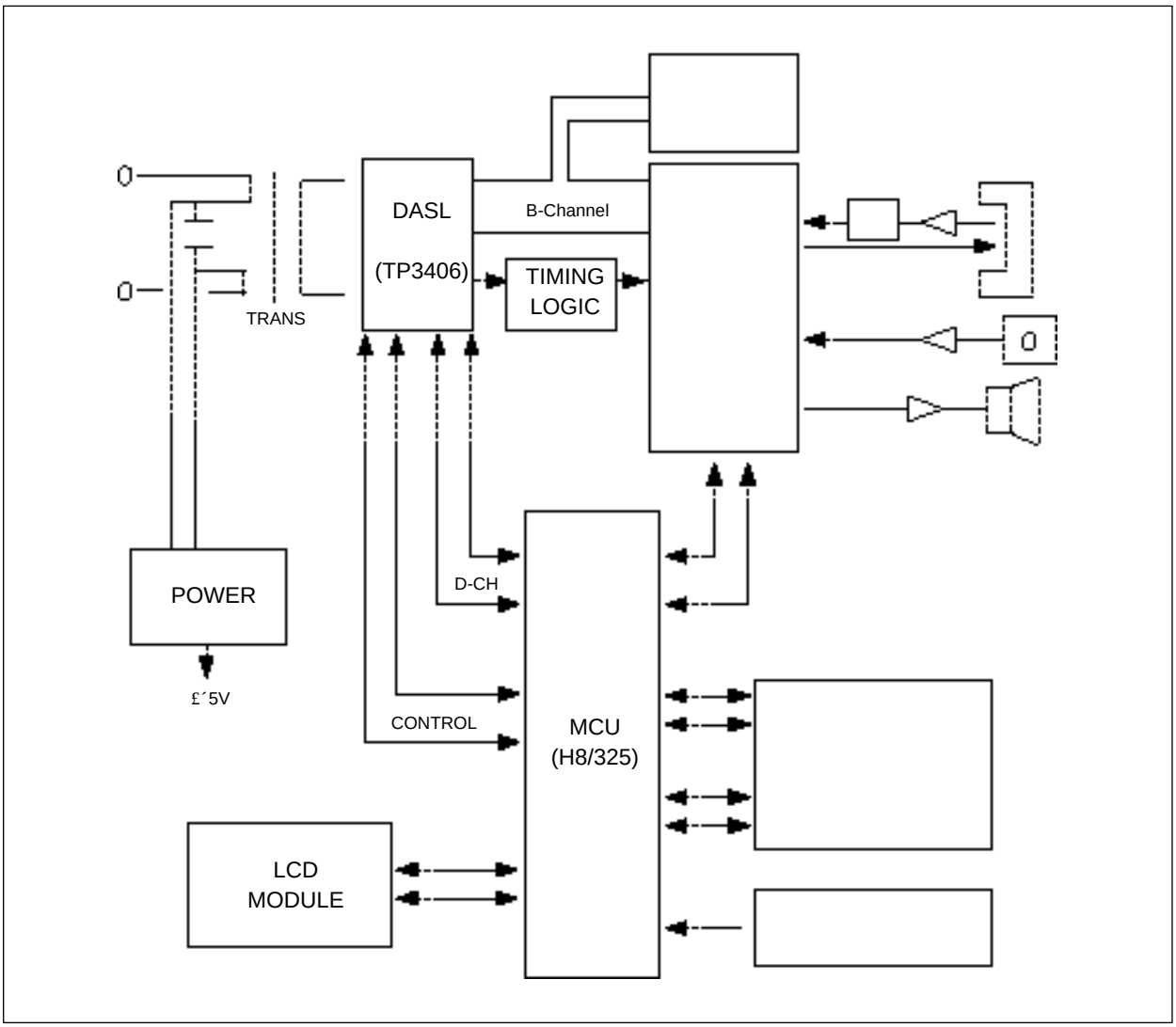
It is selectable for desk top use or wall mount. Wall mount bracket is supplied.

Digital telephone is connected to the main system through the Digital line interface (DLI), and sends or receives voice and data signal after AMI coding as 2B+D format.

u-Law or A-law voice signal is selectable according to the PCM coding mode, which is adjustable by high feature codec software setting.

MCU uses masking type of H8/325 series made in Hitachi. MCU is preprogrammed several functions.

2-15-2 Block Diagram (Phone with LCD)



2-15-3 Circuit Description

Microcontroller(MCU)

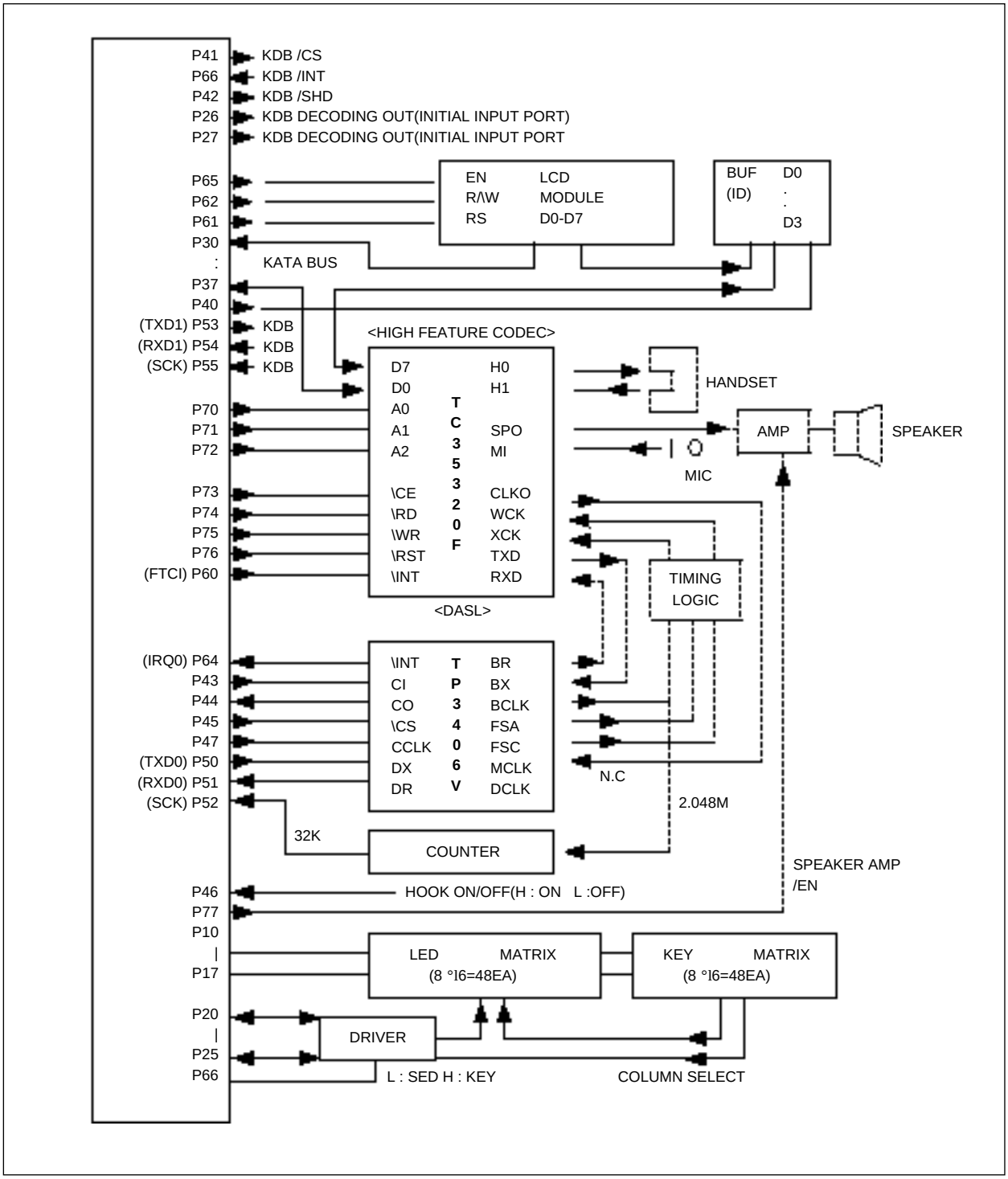
Hitachi H8/300 series are used for the MCU of the digital keyphone. It is 8-bit single chip microcontroller with flat package type.

The MCU is composed of CPU core, ROM, RAM, Input/Output ports, 2 types timers, serial communication interface, and clock generator. 6.144MHz clock is provided from high feature codec (TC35320F). It is devided into two 3.072MHz clocks inside MCU.

Specifications

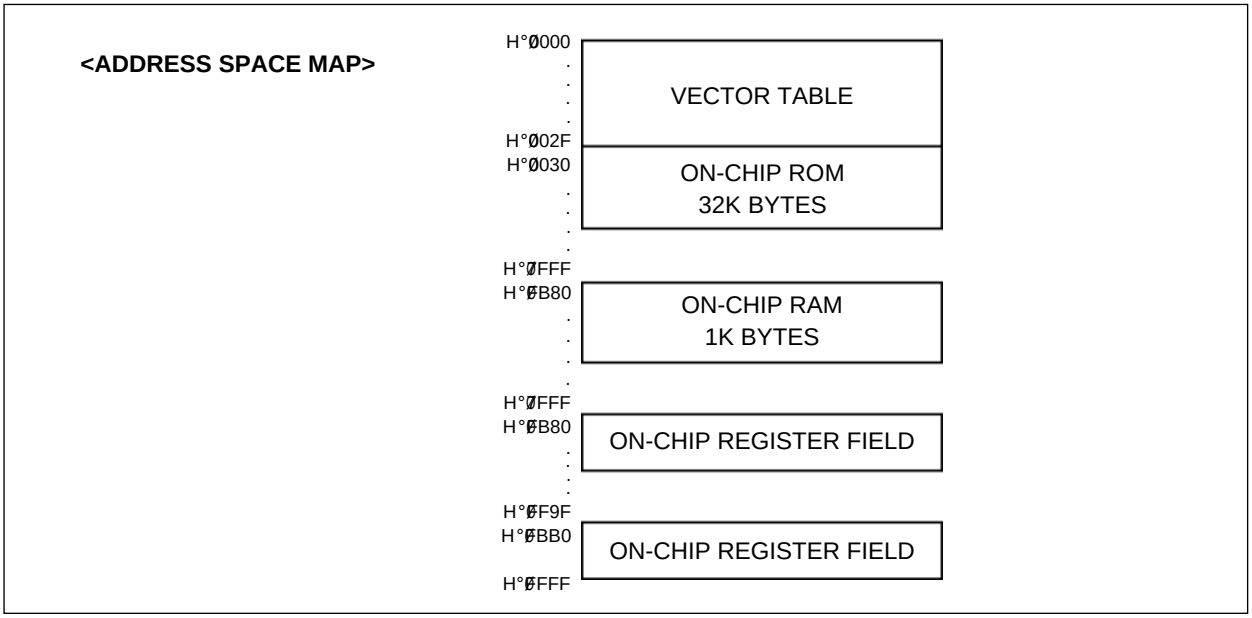
Item		H8/325	Remark
Clock Frequency		3.072MHz	6.144MHz External Clock
Instruction Execution Time		0.325 us	
Supply voltage		5V	5V ±10˚C
Operating Temperature		–25 ~ 75˚C	0 ~ 50˚C
Package Type		FP-64A	See “Pin Package”
Memory	ROM	32K byte	H8/324:ROM 24K, RAM 1K bytes H8/323: 16K, 512K bytes H8/322: 8K, 256K bytes
	RAM	1K byte	
Interrupt	External	4	2($\overline{IRQ0}$, $\overline{IRQ1}$)
SIO	UART	2	2
Operating Modes		Mode 1, 2, 3	Mode 3: Single Chip Mode
* one time PROM * masked ROM		HD6473258F HD6433258F	64P QFP (FP-64A)

Block Diagram of MCU Port



H8/32F Memory Map (Mode3)

The address map shown below is based on H8/325.



Note : The memory map shows the address space. I/O address of each port is as follows. DDR determines Input or Output. 0 is input, 1 is output. Input and output of each port are determined by the default setting.

(Port I/O Address)

PORT NO.	DDR ADDR..	DR ADDR..
PORT 1	FFB0	FFB2
PORT 2	FFB1	FFB3
PORT 3	FFB4	FFB6
PORT 4	FFB5	FFB7
PORT 5	FFB8	FFBA
PORT 6	FFB9	FFBB
PORT 7	FFBC	FFBE

Phone Types

No.	Types	3	D2	D1
1	Reserved (Simple)	0	0	0
2	LCD Phone (without LCD)	0	0	0
3	Reserved (wide LCD phone)	0	0	1
4	AOM	0	0	1
5	Reserved	0	1	0
6	Reserved	0	1	0
7	DPIM (Door Phone Interface)	0	1	1
8	Reserved	0	1	1
9~16		1	X	X

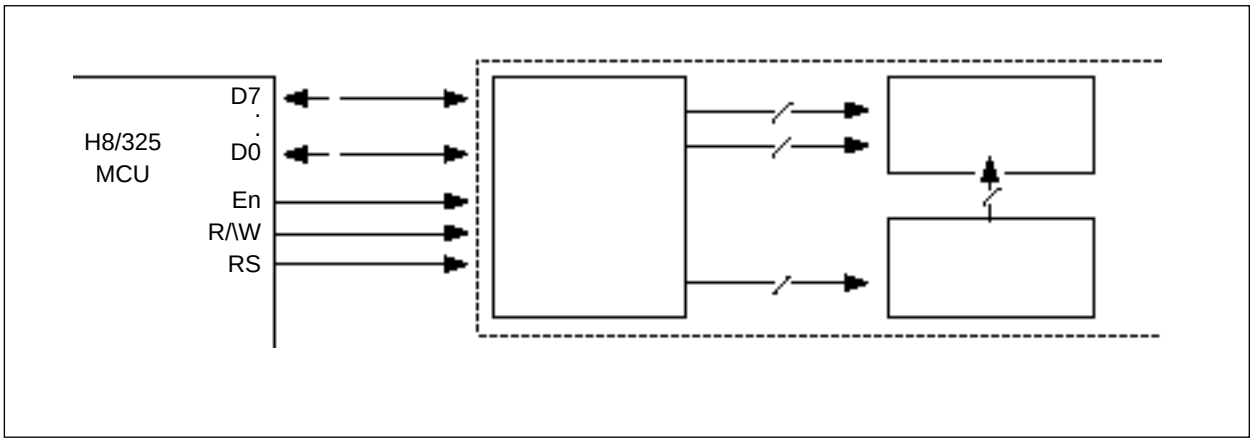
Note : During the IC initial check, if the P40 input port is low, the system regards it as a basic phone. If R4 is pull-up and the port is high, it is regarded as a output port and the system retry to read ID. The value of the ID is provided above.

2-15-4 Display

DMC16230 is used for LCD display and is controlled by u-processor H8/325F.

Specifications

Item		Standard Value			
		Min	Typical	Max.	Remark
Supply voltage (V)		0	–	0.7	Vcc ~ Vss + 5V
Operating Temperature		0	–	+50˚C	
Power Current (mA)		–	0.5	2.0	Vcc = +5V
Display	Format	16 Characters x 2 Line			
	Fonts	5 x 7 Dots + Cursor			
Module Size (W x H x T)		122 x 44 x 11 (mm)			



2-15-5 Key & LED Matrix

Key matrix

When composing of the matrix, the column and row method is used to reduce the number of port.

Key scan is the section to detect key input from the key matrix which composed with 8 row x 6 column.

If any 1 row among 8 rows is optionally selected and set to high and the rest set to output low, it will be inverted through ULN2803. The column state can be read. The direction of U11/U12 buffer(74HC224) should be determined P63 port of MCU. When it reads key, it is H, and when it writes LED, it is L.

74HC244 has eight buffers inside and it is possible to control each four buffers. The control terminal is divided into two groups, 1G and 2G, 2G is used during key input and 1G is used during LED output. The output terminal which is not used is in tri-state, and does not affect each other. When common row is selected, it shows which key is pressed by reading the ports P20-P25 of P10-P17 colume.

To prevent malfunction of keys, key scan counter is set to 2, with the key scan timing 18msec minimum and 32msec maximum.

Led Matrix

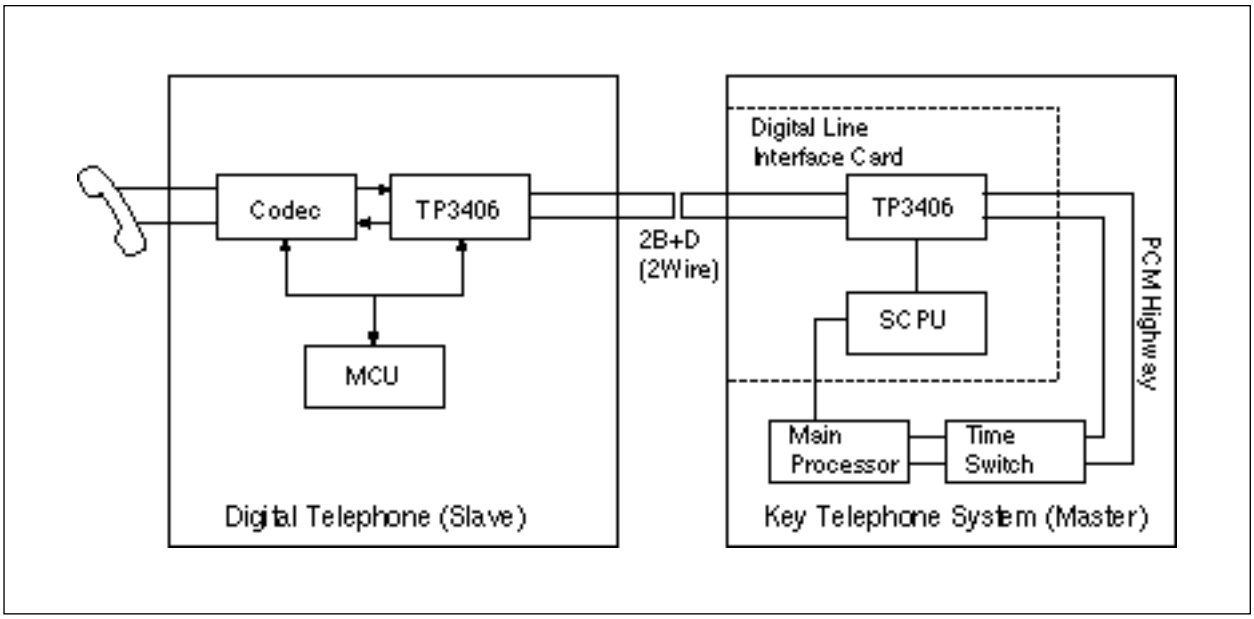
LED display control is operated with the dynamic mode, and is made up of 8 row and 6 columns. If any 1 row among 8 row is optionally selected and set to high and the rest set to output low, it will be inverted through ULN2803. After writing column output. LED turns off for 2ms at interval of every 17ms. To turn on LED you want, you should decide the direction of U11/U12 buffer.

The direction of the buffer U11/U12 is determined by P63 port of MCU and is low during LED writing.

Digital Line Interface

The digital keyphone exclusively used for the keyphone system connects master and slave with 2line and uses 2B+D format to send/receive signals between master and slave. The AMI code sent from master in the burst mode is divided into B-ch and D-ch through the interface. The PCM data of B-ch is sent to codec and D-ch is used communicate with UART and MCU.

Connection Diagram between Master and Slave



Specifications of TP3406

Item
Transmission Interface Transmission Speed B Ch Speed Signalling Speed PLL Type Line Coding Coding Type Loop Range Line Impedance Loop Resistance Input Clock Master/Slave Pakage Power Power Feeding

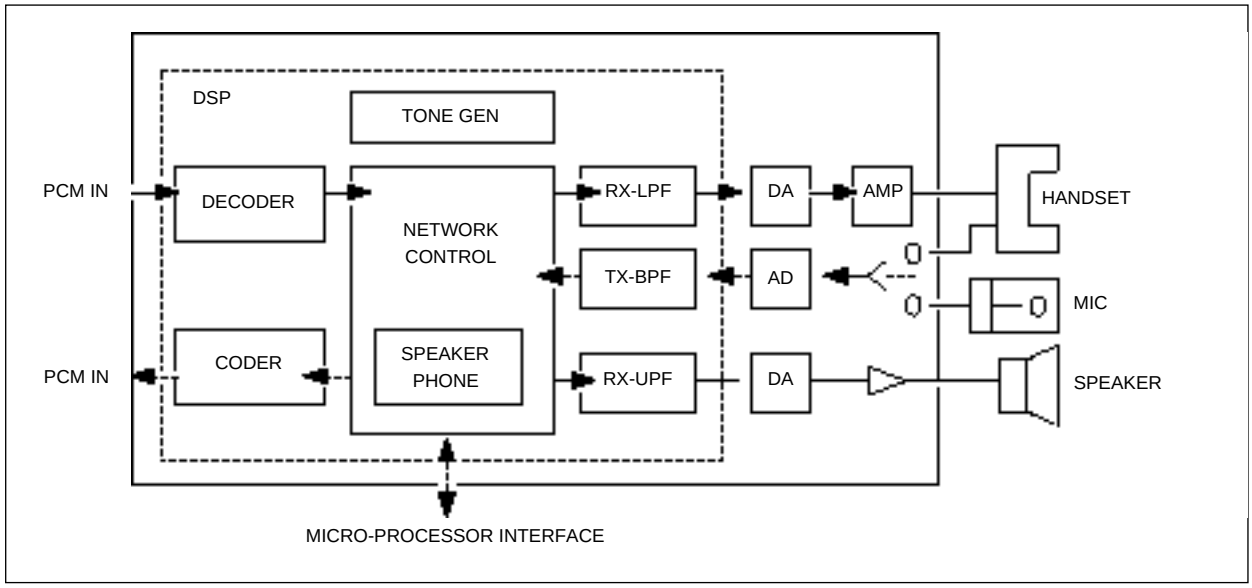
2-15-6 High Feature Codec

High Feature

TC35320 is used for this feature. TC35320 is designed to be used with TC335321 (Data transmission LSI). It features as follows

°‹Enable to control the levels of Tx, Rx, and side tone with software program
°‹Built-in speakerphone. Gain control with software program is allowed.
°‹Single Power Supply
°‹Beep tone source equipped. Adjustable level with software program.
°‹Equipped with DTMF sender
°‹Can generate various rings by mixing up with 5 frequencies.
°‹u-law or A-law is selectable.
°‹Allowable to interface with MPU by serial and parallel.

TC35320 Block Diagram

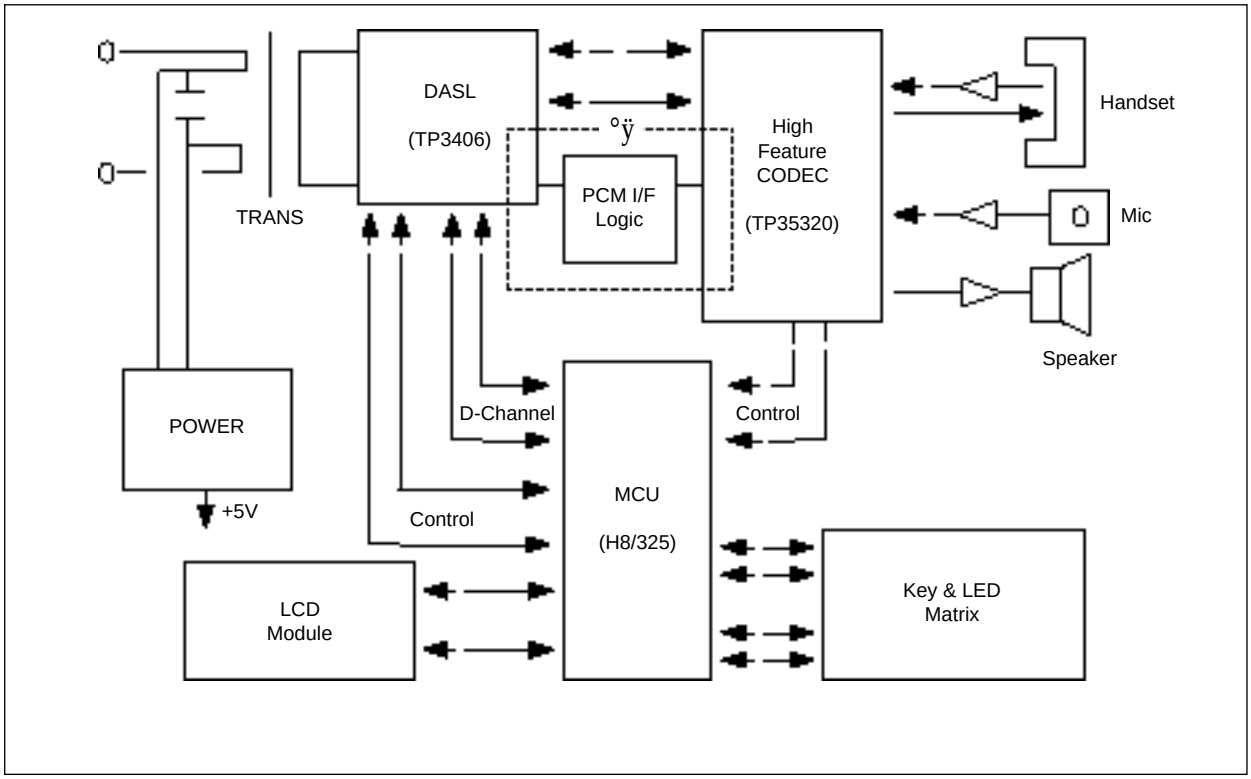


Specifications

Item	Symbol	Condition	Rating	Unit
Supply Voltage	VDD		4.75 to 5.25	V
Input Voltage	VID		0 to VDD	
Clock Deviation	ΔfCLK	12.288MHz	–100 to +100	PPM
Operating Temperature	Ta		–10 to 70	˚C
Storage Temperature	Tstg		–55 to 150	
Soldering Temperature	Tsol		260	
Current Consumption	IDD	VDD=5V	52 to 65	mA
Digital Current Donsumption	ISSD		40	
Analog Current Consumption	ISSA		12	

2-15-7 PCM Interface

Block Diagram

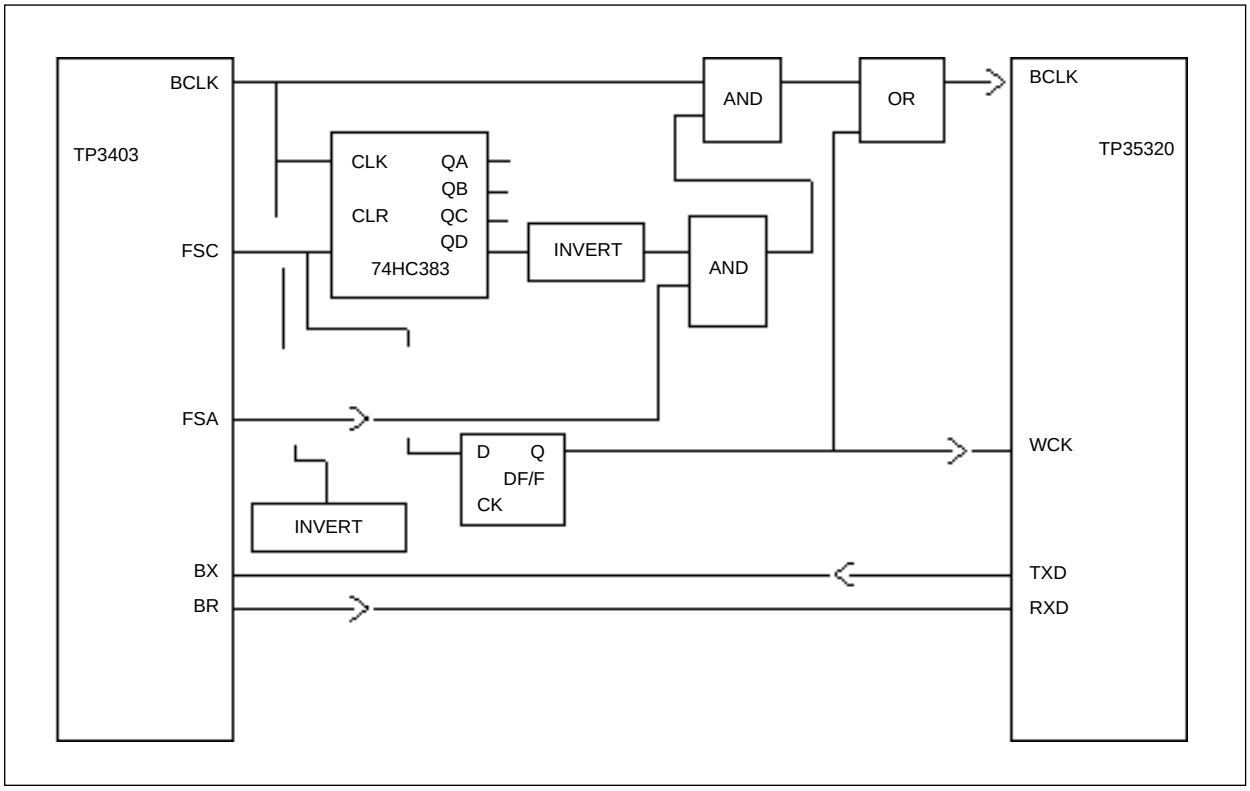


Circuit Description

The PCM In/Out clock must be 2.048MHz which is the master clock. Data is transmitted from RISING of time BCLK at TP3406, and is received to FALLING time of XCK at TC35320F.

WCK inverted to BCLK and is fed to CK of D-F/F.

PCM Interface Block Diagram



2-15-8 Handset Microphone

Dynamic unit is used for a handset in a digital phone. OP amp LM359 is provided for TX gain(50). The reference voltage of OP amp is 2.5V.
The output of TC35320F is used for Handset RX. Switching diode is added to the terminal of TX and RX to protect high feature codec from ESD.
OP amp is also used for the microphone input, which amplifies the microphone output level.

2-15-9 Tone & Ring

Beep Tone

Beep tone is generated at TC35320F and is selected from 1KHz or 2KHz. Default is 1KHz.
Beep tone is out from handset or speaker. The levels are adjustable with software programming

Ring Tone

Ring tone is selected from 5 kinds of single frequency source (300, 400, 600, 800, 1kHz). It is generated by frequency modulation with 2 of them or amplitude modulation using software control.
Ring level is adjustable when the unit rings or with the volume up/down keys.

AMP

External amp circuit activates the speaker output port in high feature codec. MC34119 is used for the low power audio amplifier circuit and it has an advantage to gain stable output at the low voltage. The speaker impedance is 32Ohm.

2-15-10 Power CC'T Part

The power used in a digital phone is single 5V which is converted from -55VDC through the DLI port of main system. Bridge diode is used to stabilize power irrespective of the polarity.
The 5V is devided into +5A(analog +5) and +5D (digital +5V) to be used.

2-16 KDB-D B'd

KDB(Keyset Daughter B'd) is an option b'd which uses 2B+1D, the basic form of digital phone and is an additional interface device.

There are two kinds of board : KDB-DLI and KDB-SLI, KDB-DLI can be equipped into a digital key phone, and KDB-SLI can be equipped into a single line telephone.

Two highway channel is allocated at the digital phone user's port to use 2B+D.

If 2B is given to the digital phone, B1 and B2 can be used respectively within a prectetermined distance because FSA, FSB, BX, BR, and BCLK can not used externally. KDB can solve the problem by connecting digital phone to the modular jack on the KDB.

To operate, the interface IC should be set to master mode and digital phone should be set to slave mode.

The MCU in the digital phone controls digital phone and all interface ICs in the KDB, SIO-1 and SIO-2 control D-channel. The interace IC has B1 and B2 channel which are controlled by FSA, and FSB respectively.

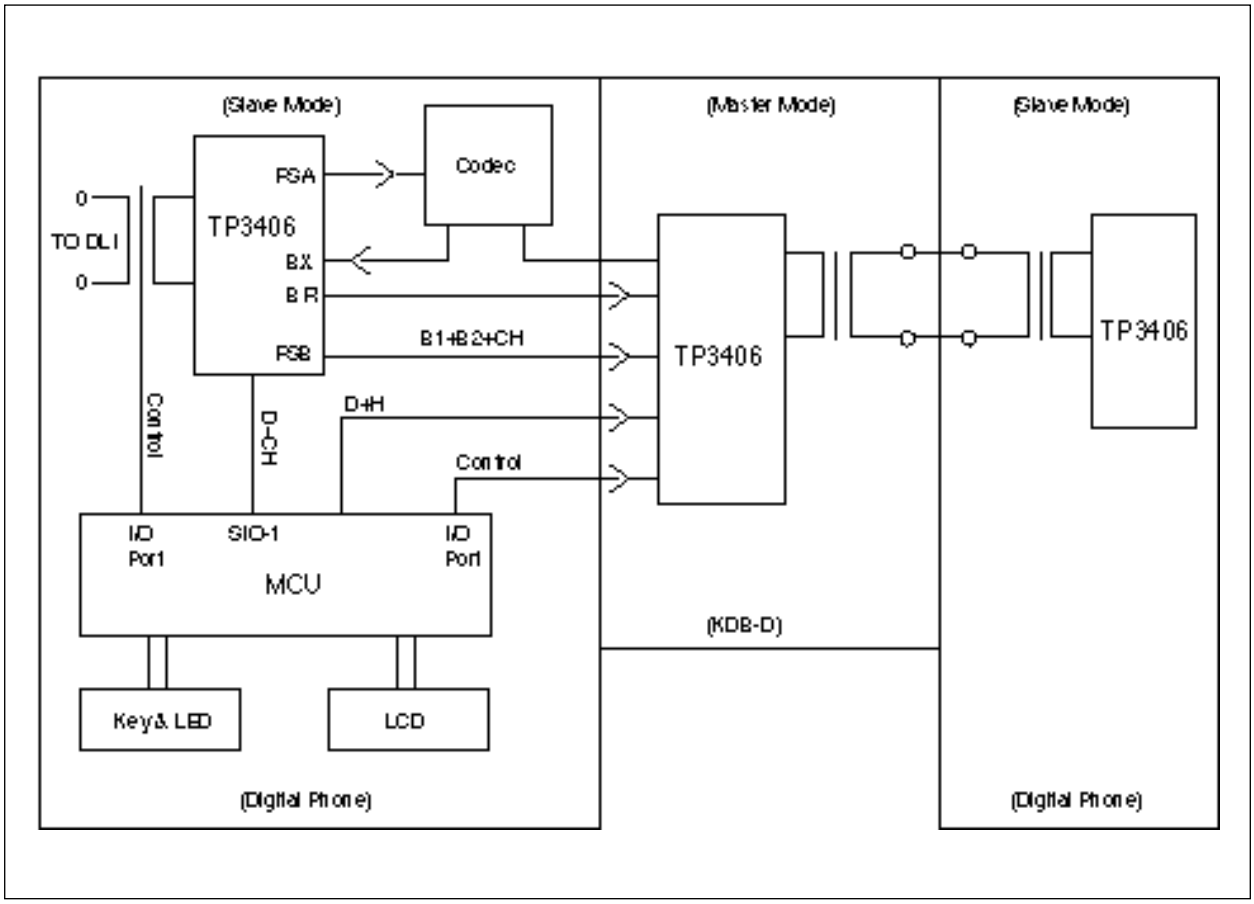
To divide B1 and B2, 3-state buffer is used, which is controlled by FSA and FSB.

Short frame sync FSC is used and BCLK in the interface-2 IC is commonly used.

The interface-2 IC is to relay the PCM signal from B2 channel and retransmits the D-channel data to interface-2 IC through SIO-2 from SIO-1.

To manage the system control, SIM (serial interface module) will be used.

Connection Diagram between Digital phone and KBD



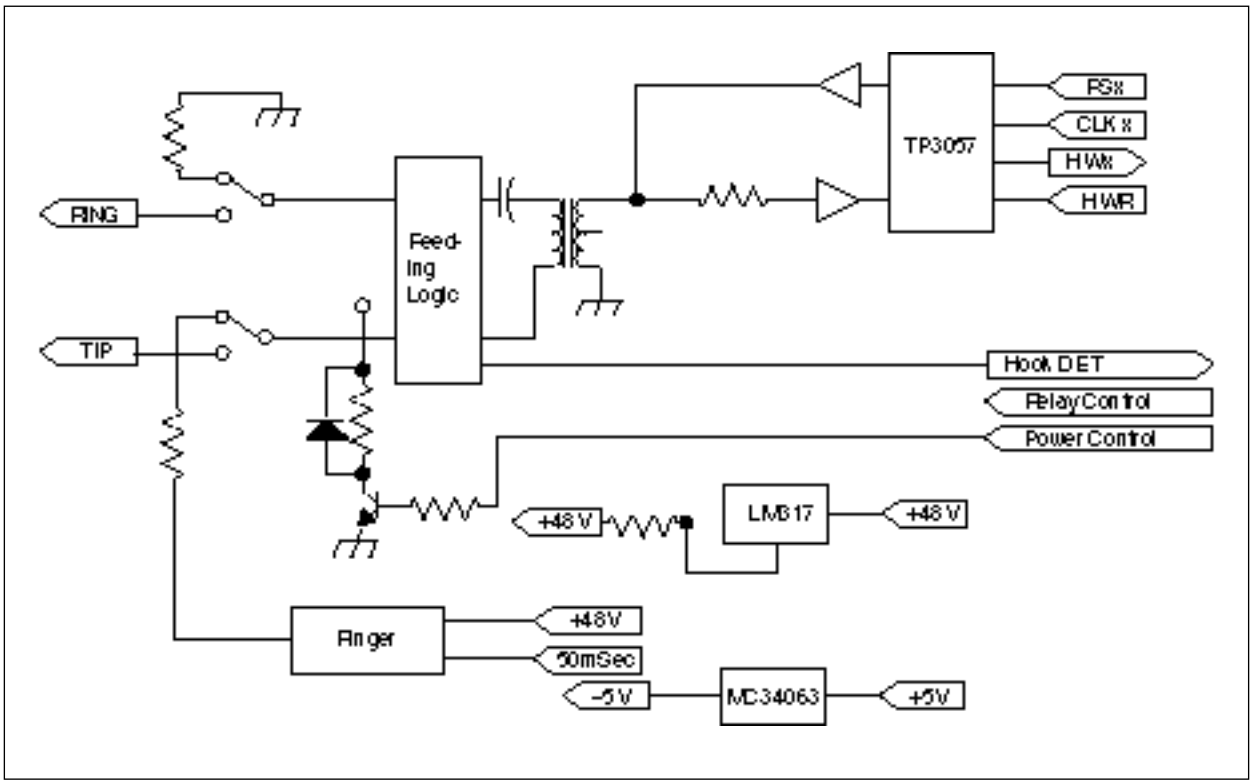
2-17 KDB-S B'd

2-17-1 General

Regular telephone interface KDB-SLI performs 2B voice data conversion using code TP3057. KDB-SLI supports 1 line regular telephone interface and composed of codec (D/A0, -5V power, regular phone feeding (+56V), and ringer. DTMF detection is achieved by DSP in KSU engine.

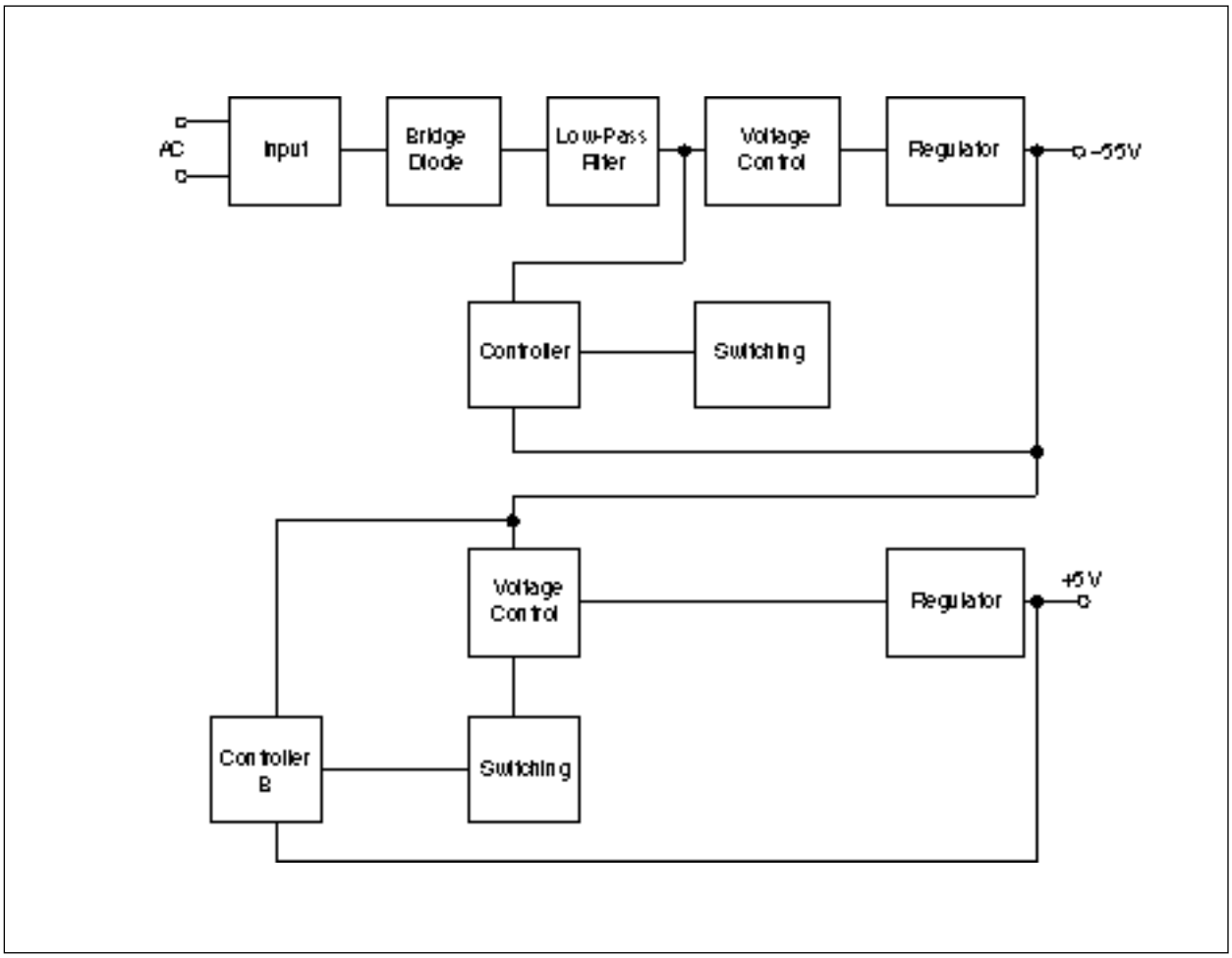
Connection to digital phone is made with 2 line through DLI port. A regular phone can be connected to the digital phone by using the optional KDB-SLI.

2-17-2 Block Diagram



2-18 Power Supply

2-18-1 Block Diagram



Chapter 4
Digiphone Selftest & Troubleshooting

4-1 Digiphone Selftest....4-3
4-2 Troubleshooting 4-4
4-2-1 Power Supply Check....4-4
4-2-2 When MEM LED is not flickered or system is continuously reset after 10 seconds the power turns on 4-5
4-2-3 Memory Backup Failure....4-6
4-2-4 Real Time Clock Misoperation....4-6
4-2-5 System Backup Failure....4-7
4-2-6 SLI DC Feeding Misoperation 4-8
4-2-7 SLI DTMF Detection Failure....4-9
4-2-8 SLI Dial Pulse and Ring Detection Failure....4-10
4-2-9 Tone does not generate from TRK or SLI port....4-11
4-2-10 Digital phone Misoperation....4-12
4-2-11 TRK (3 TRK, 6 TRK) B'd Troubleshooting....4-13
4-2-12 SLI ring Generation Failure 4-18
4-2-13 AC15 Troubleshooting....4-19
4-2-14 AA Troubleshooting....4-21
4-2-15 No Digitalphone Power....4-22
4-2-16 Abnormal Key of Digitalphone....4-23
4-2-17 Digitalphone Key Operation Failure....4-24
4-2-18 LCD Display Misoperation....4-25
4-2-19 Abnormal Digitalphone Ring....4-26
4-2-20 Digitalphone Voice Conversatiion Misoperation....4-27
4-2-21 Handset Conversation Misoperation (Speakerphone is normal)....4-28
4-2-22 Speakerphone Misoperation....4-29
4-2-23 2B Digitalphone Misoperation....4-30
4-2-24 Abnormal Ring Operation of 2B Standardphone....4-31
4-2-25 Abnormal Hook Detection of 2B Standardphone....4-32
4-2-26 2B Standardphone Speech Path Failure....4-33
4-2-27 SIM Troubleshooting 4-34
4-2-28 DPIM Troubleshooting....4-35
4-2-29 External Music Operation Failure....4-36
4-2-30 Common Bell Operation Failure....4-36

4-1 Digiphone Selftest

1. Connect the digital keyset to DLI port and press # button before the digital keyset is reset.
2. LCD module is self-tested. All display messages available are displayed.
3. Press # button to enter the test mode.

Key & LED Test Mode

All LEDs are lit. If you press the corresponding buttons, the amber LEDs turn green and the red LEDs are off.

If you press number buttons including ¶S and #, the color of DSS LEDs are changed to red from amber, and the red LEDs are turned off.

If you press the soft buttons, the LED color of DSS 13, 14, 19, and 20 buttons are changed.

Ring Test

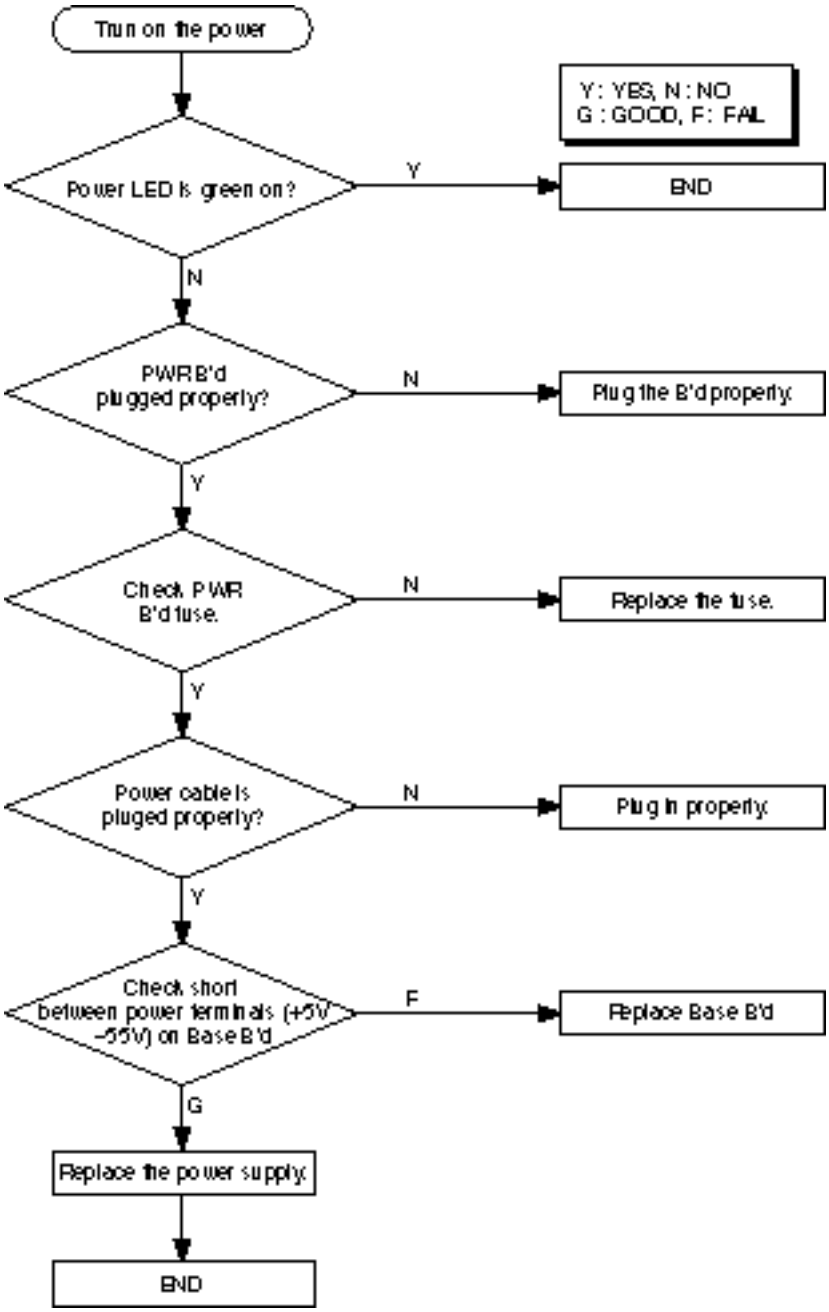
Each time you press ¶S button, 8 kinds of ring are generated.

Transmission Test

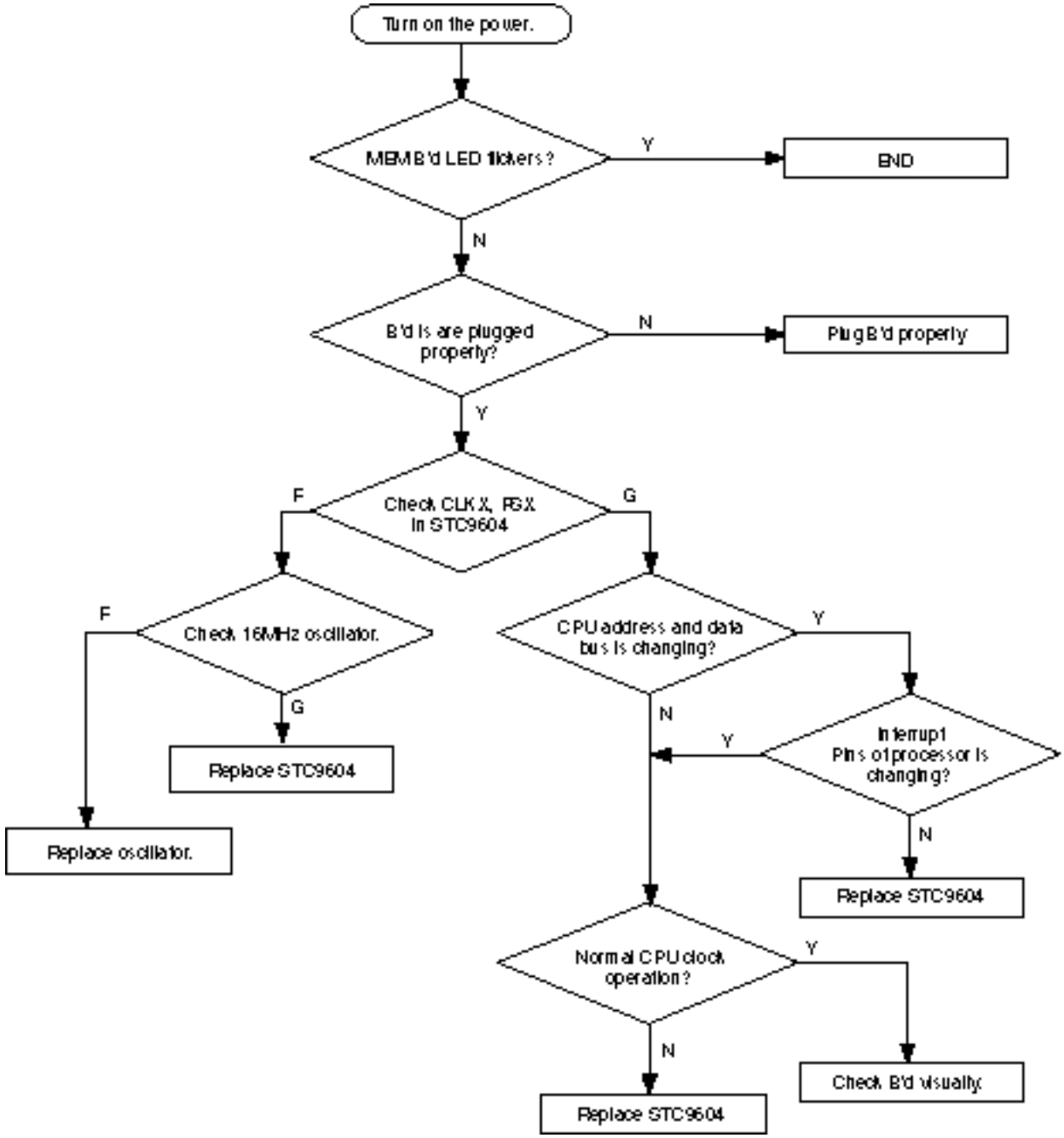
The LCD display ‘C7’ while turning sync. Wait a minute and press any button to exit the test mode.

4-2 Troubleshooting

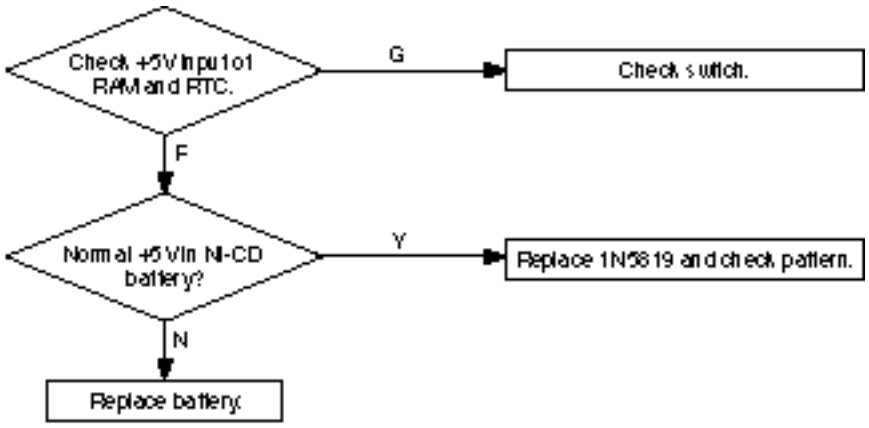
4-2-1 Power Supply Check



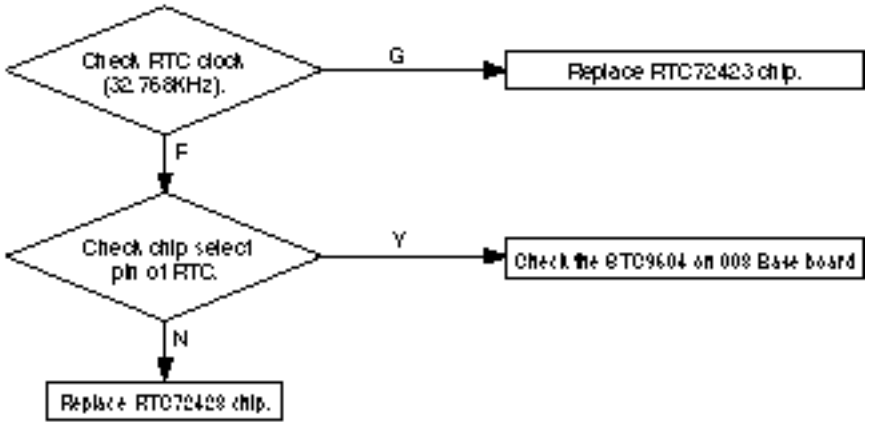
4-2-2 When MEM LED is not flickered or system is continuously reset after 10 seconds the power turns on.



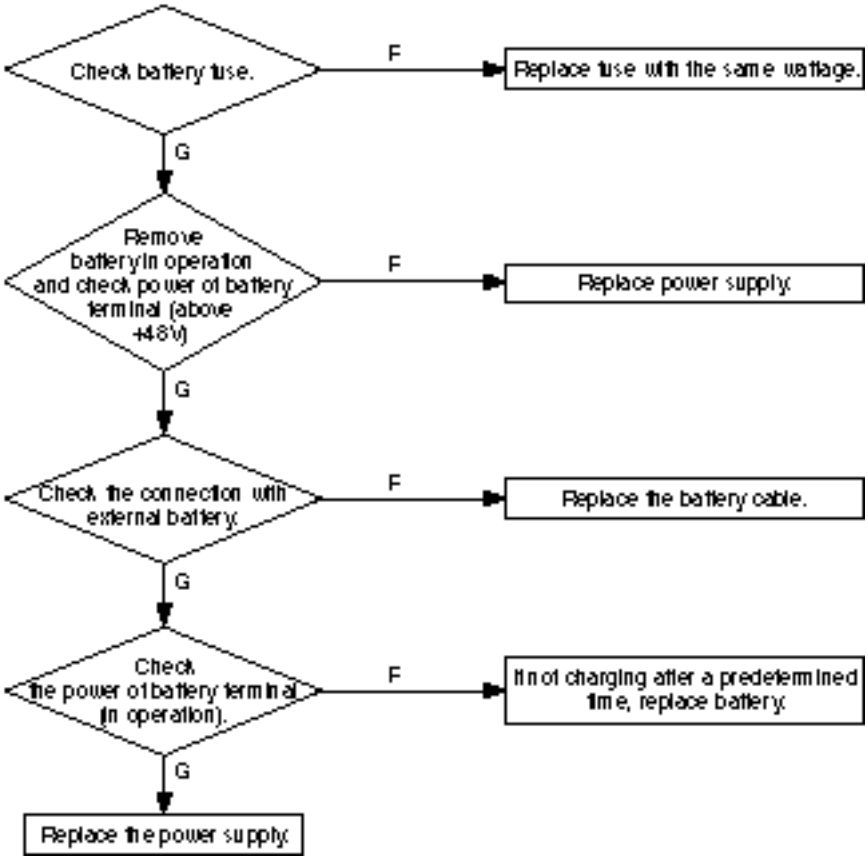
4-2-3 Memory Backup Failure



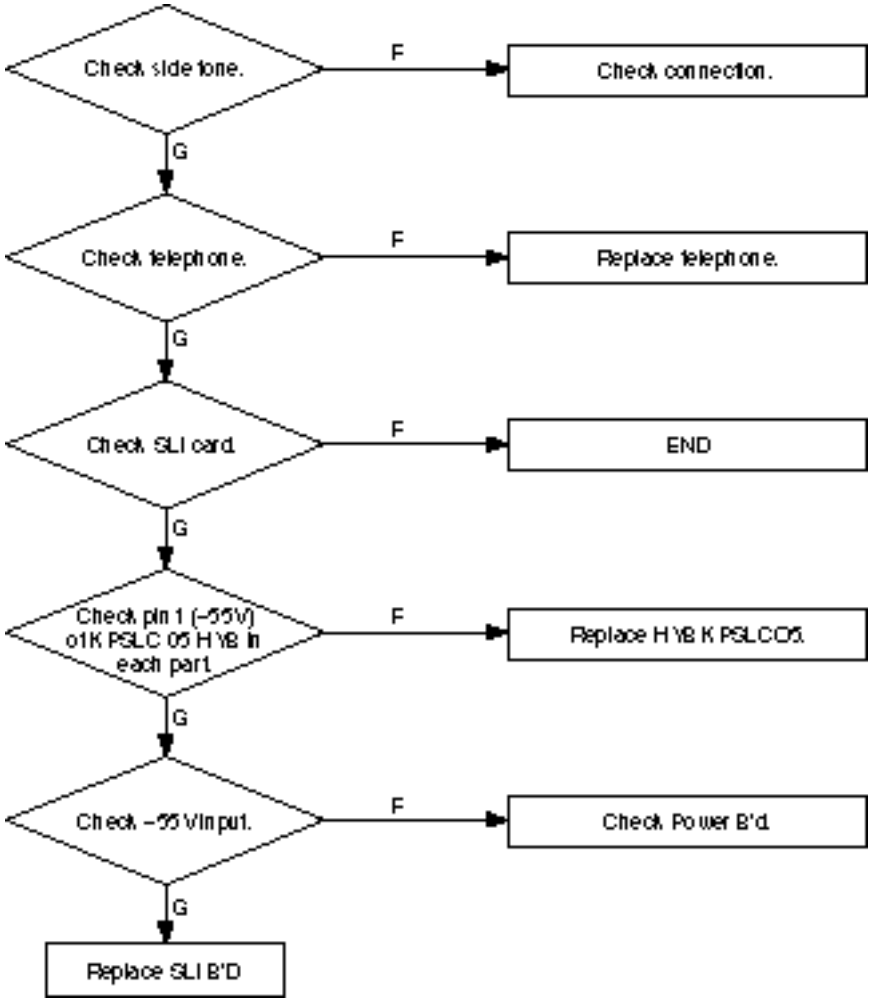
4-2-4 Real Time Clock Misoperation



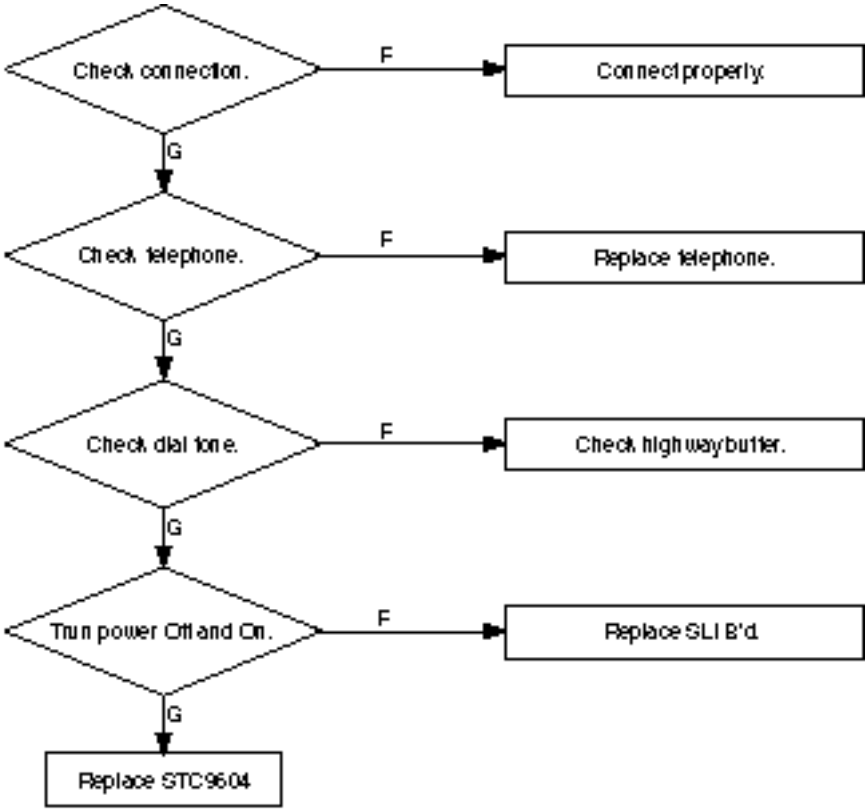
4-2-5 System Backup Failure



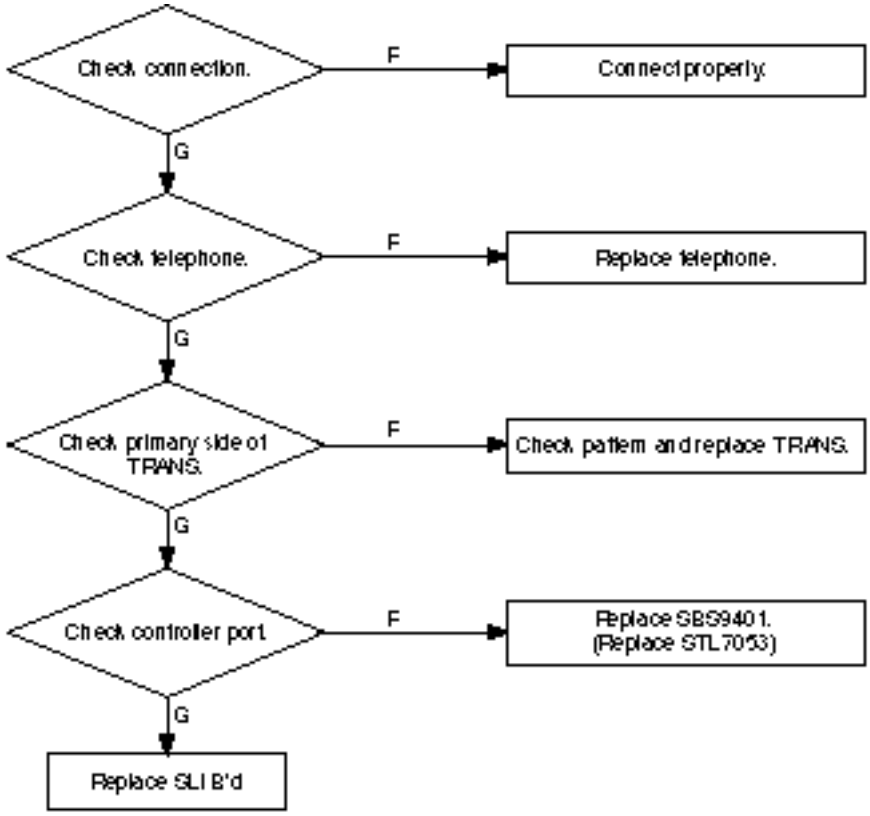
4-2-6 SLI DC Feeding Misoperation



4-2-7 SLI DTMF Detection Failure

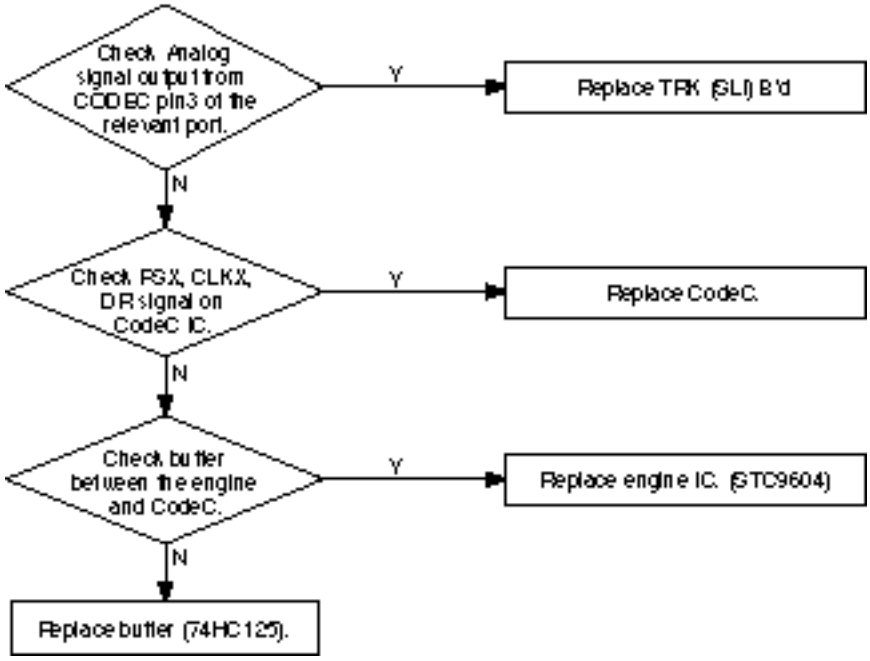


4-2-8 SLI Dial Pulse and Ring Detection Failure

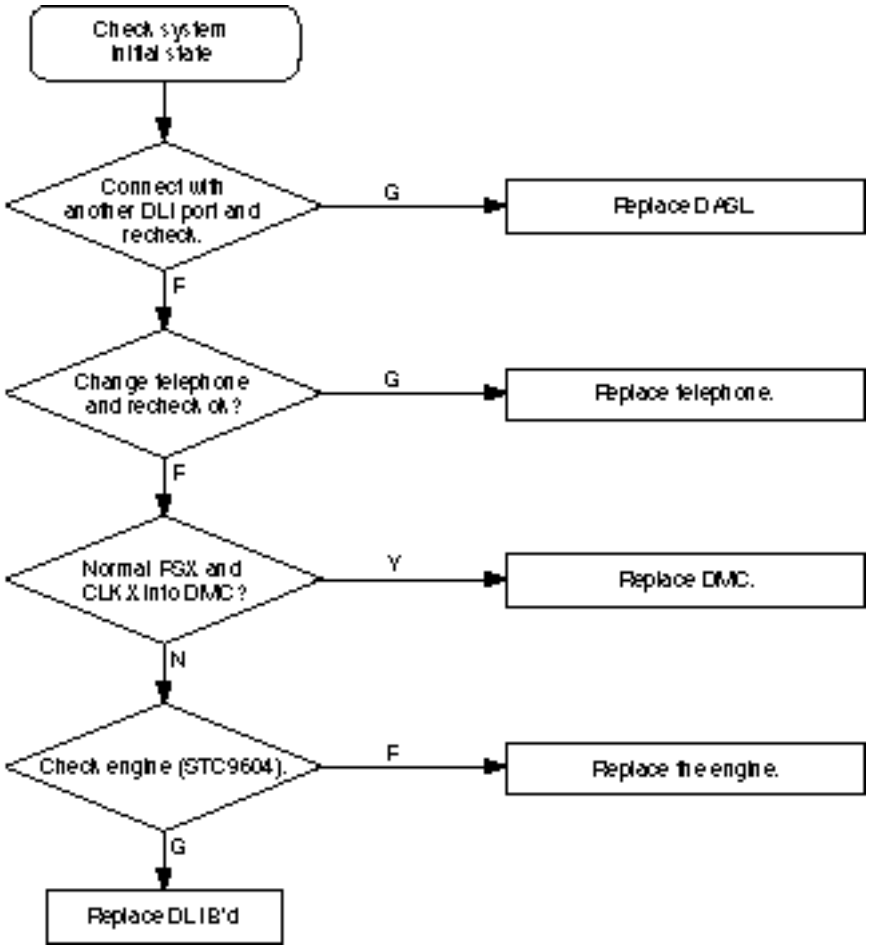


* CONTROLLER: SBS9401 or STL7053

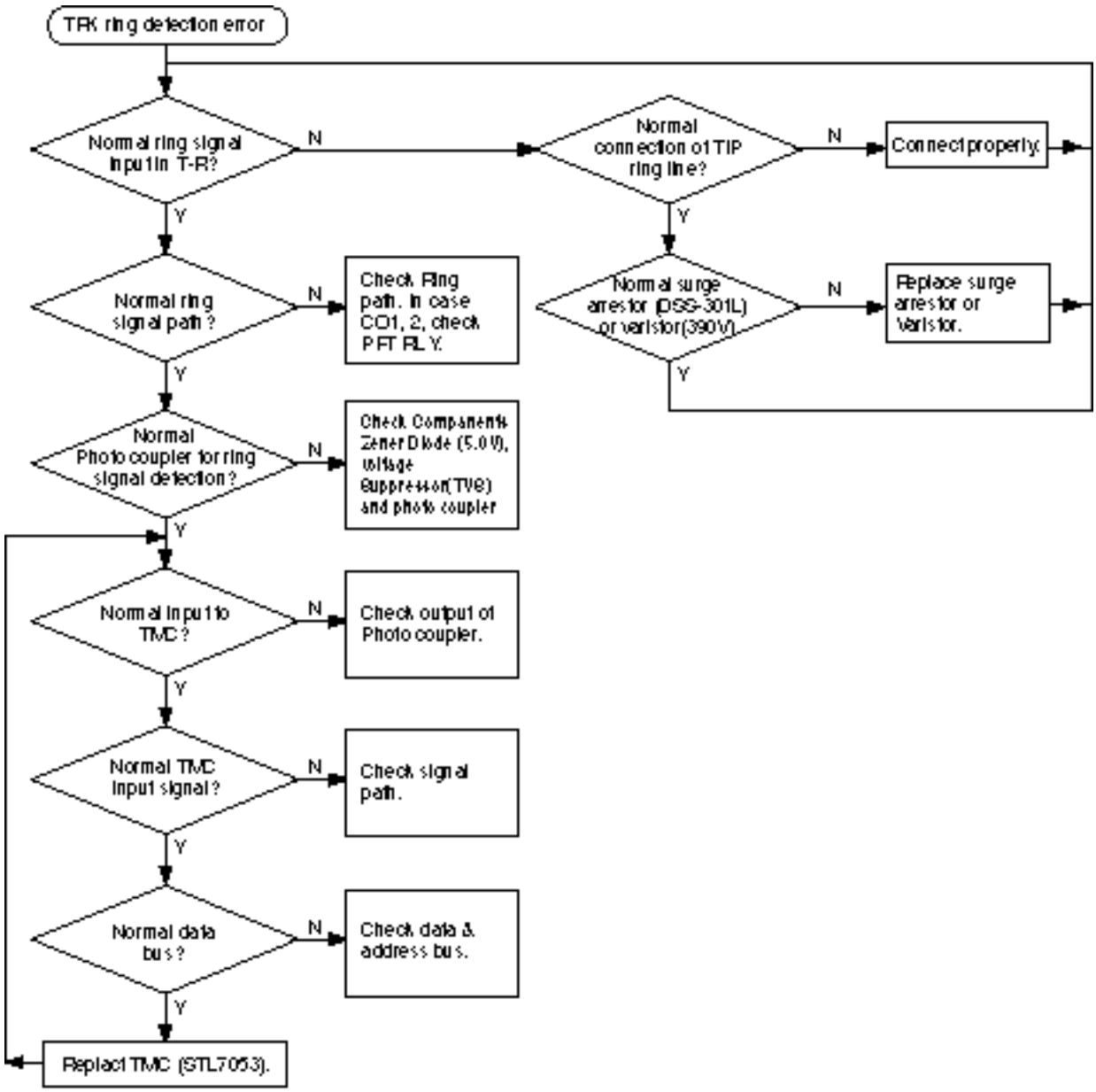
4-2-9 Tone does not generate from TRK or SLI port

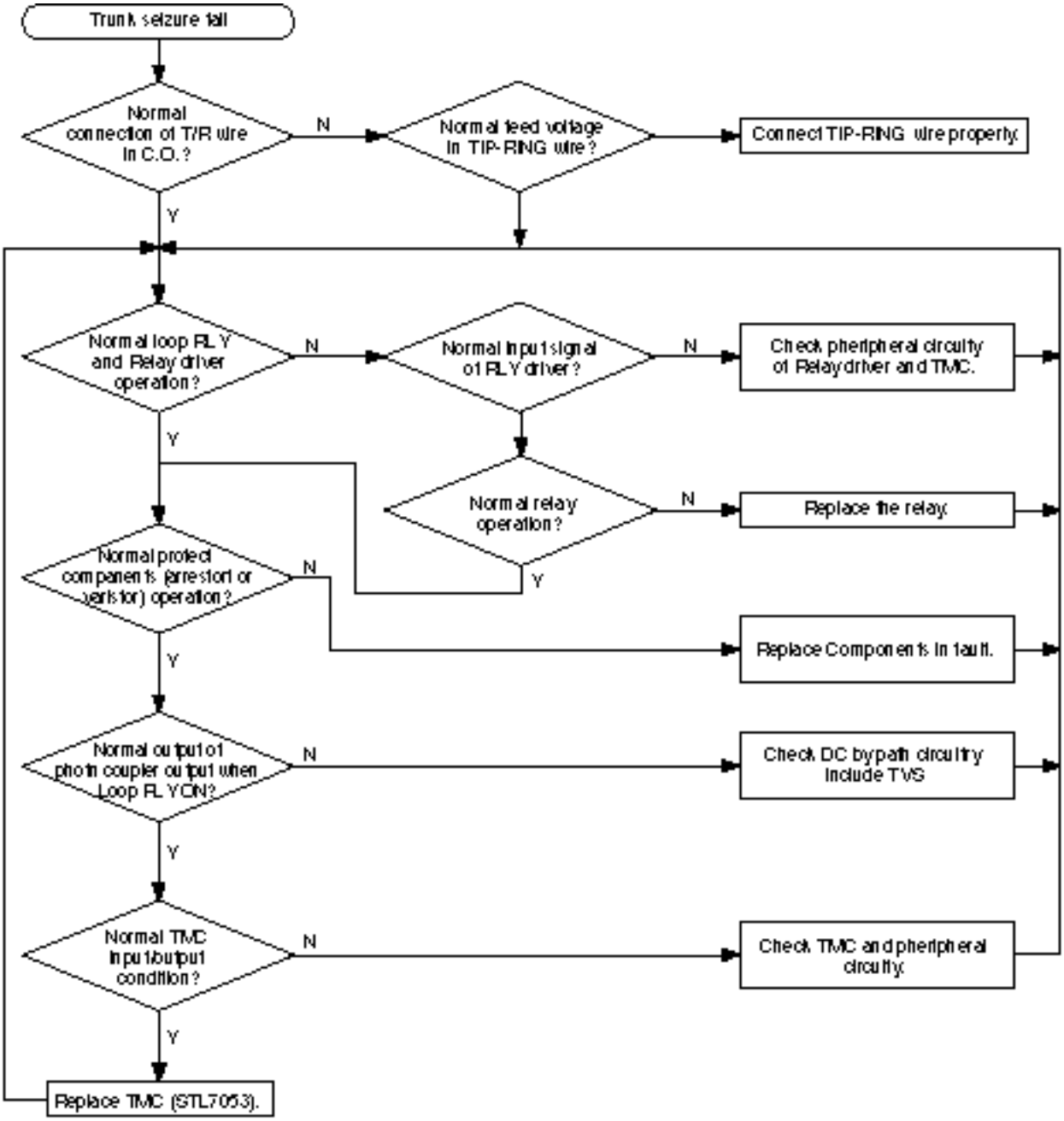


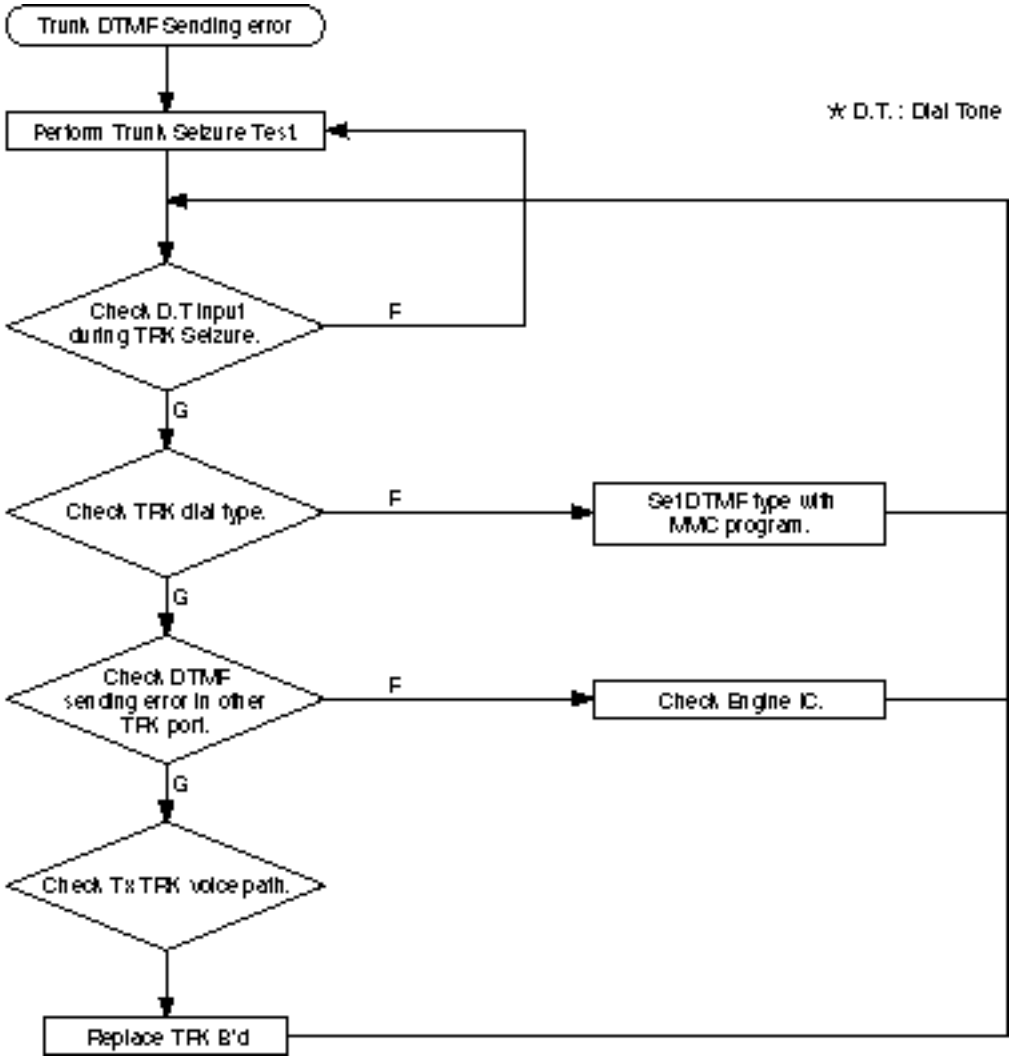
4-2-10 Digital phone Misoperation

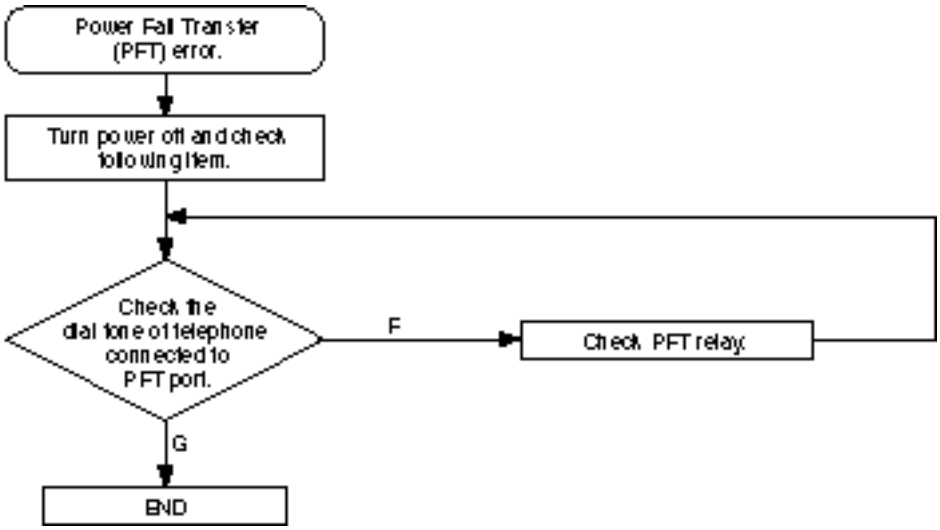


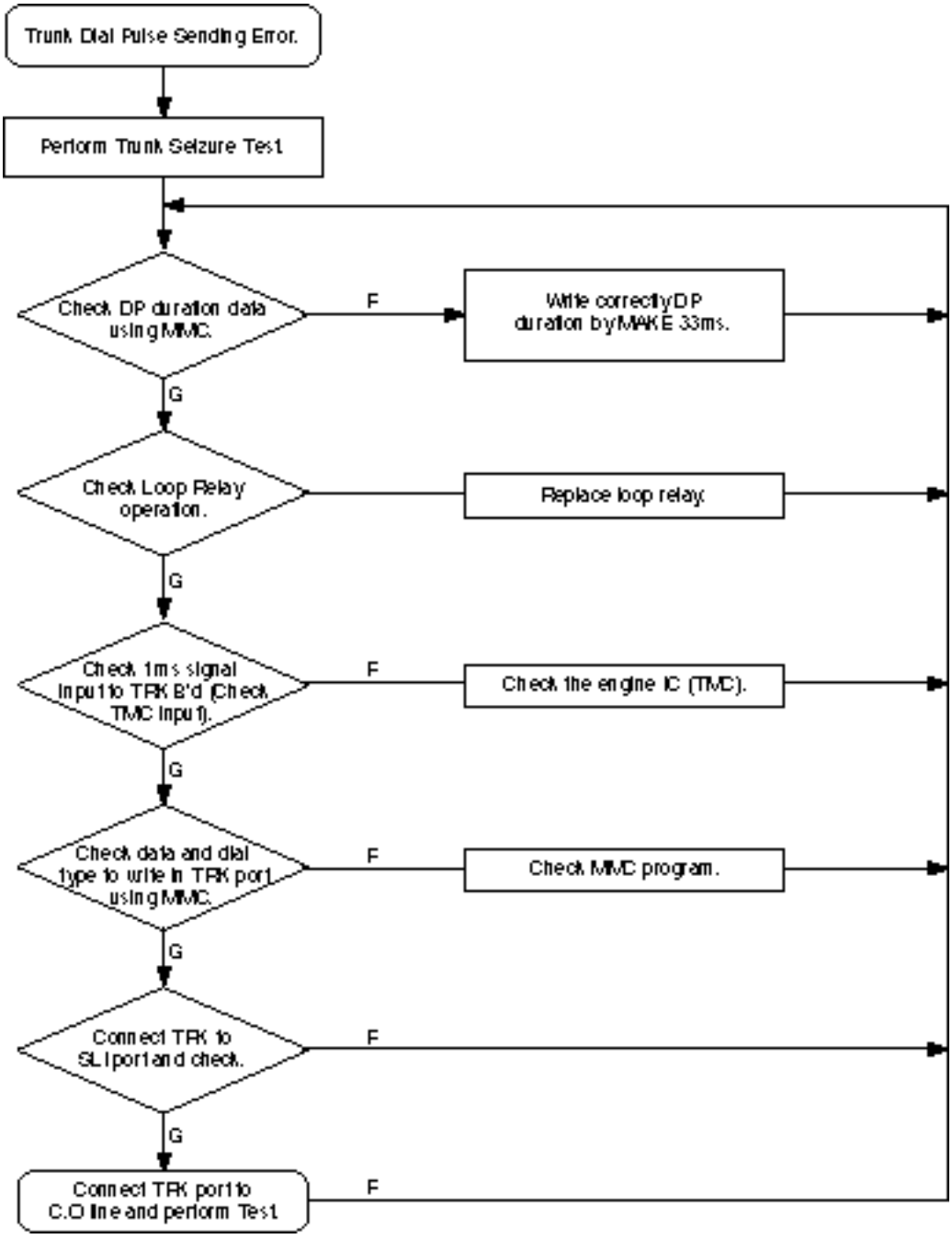
4-2-11 TRK (3 TRK, 6 TRK) B'd Troubleshooting



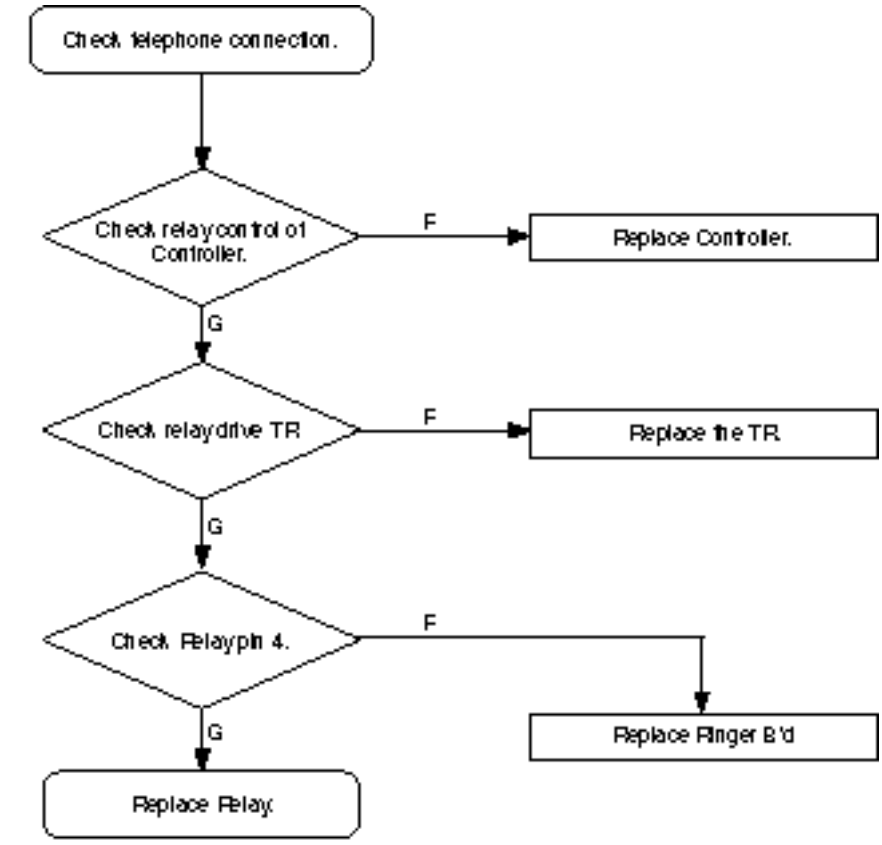

Trunk seizure fail
Normal connection of T/R wire in C.O.?
N
Normal feed voltage in TIP-RING wire?
Connect TIP-RING wire properly.
Y
Normal loop RLY and Relay driver operation?
N
Normal input signal of RLY driver?
N
Check pheripheral circuitry of Relay driver and TMC.
Y
Normal relay operation?
N
Replace the relay.
Y
Normal protect components (arrestort or varistor) operation?
N
Replace Components in fault.
Y
Normal output of photo coupler output when Loop RLY ON?
N
Check DC bypath circuitry include TVS
Y
Normal TMC input/output condition?
N
Check TMC and pheripheral circuitry.
Y
Replace TMC (STL7053).


Trunk DTMF Sending error
Perform Trunk Seizure Test
Check D.T Input during TRK Seizure.
F
G
Check TRK dial type.
F
Set DTMF type with MMC program.
G
Check DTMF sending error in other TRK port.
F
Check Engine IC.
G
Check Tx TRK voice path.
Replace TRK B'd
* D.T. : Dial Tone


Power Fail Transfer
(PFT) error.
Turn power off and check
following item.
Check the
dial tone of telephone
connected to
PFT port.
F
Check PFT relay.
G
END

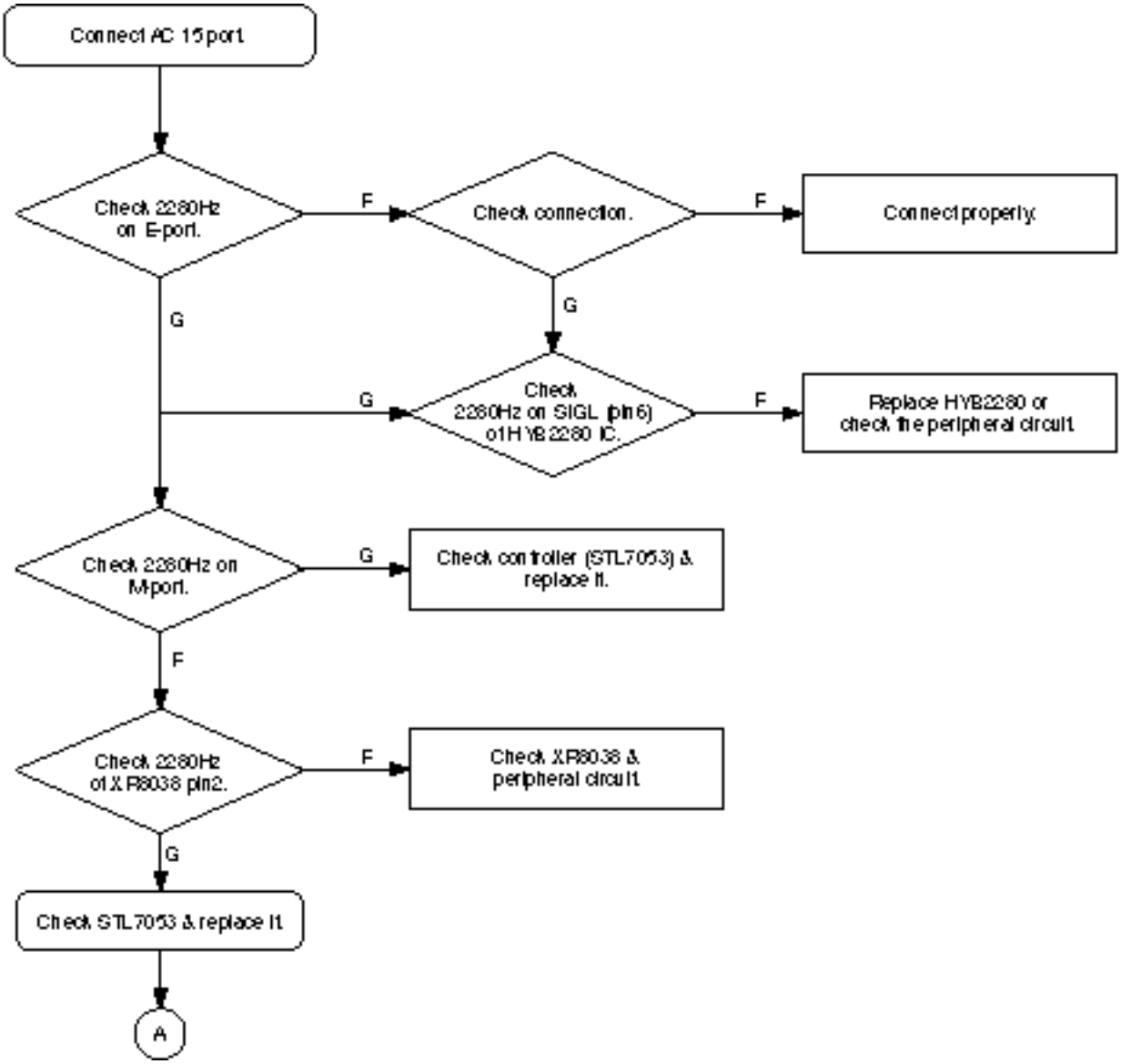

Trunk Dial Pulse Sending Error.
Perform Trunk Seizure Test
Check DP duration data using MMC.
F
Write correctly DP duration by MAKE 33ms.
G
Check Loop Relay operation.
Replace loop relay.
G
Check 1ms signal input to TRK B'd (Check TMC input).
F
Check the engine IC (TMC).
G
Check data and dial type to write in TRK port using MMC.
F
Check MMC program.
G
Connect TRK to SLI port and check.
F
G
Connect TRK port to C.O line and perform Test
F

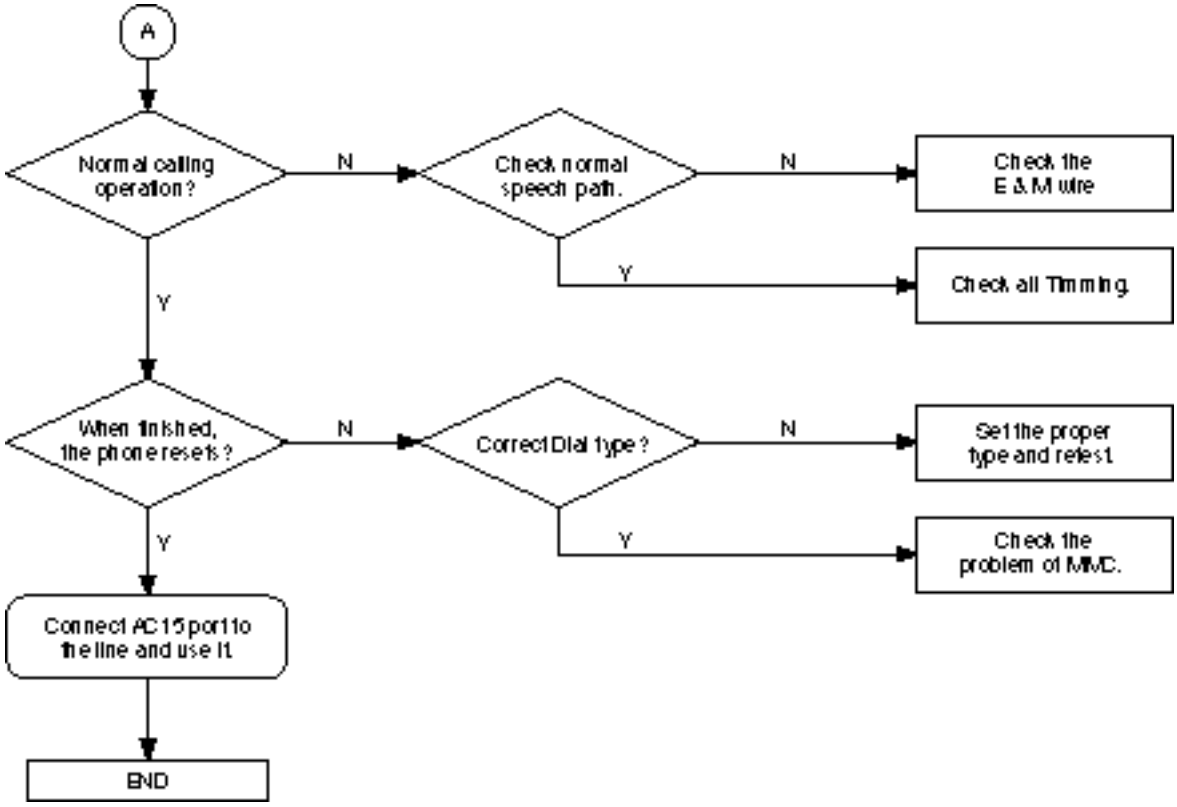
4-2-12 SLI ring Generation Failure



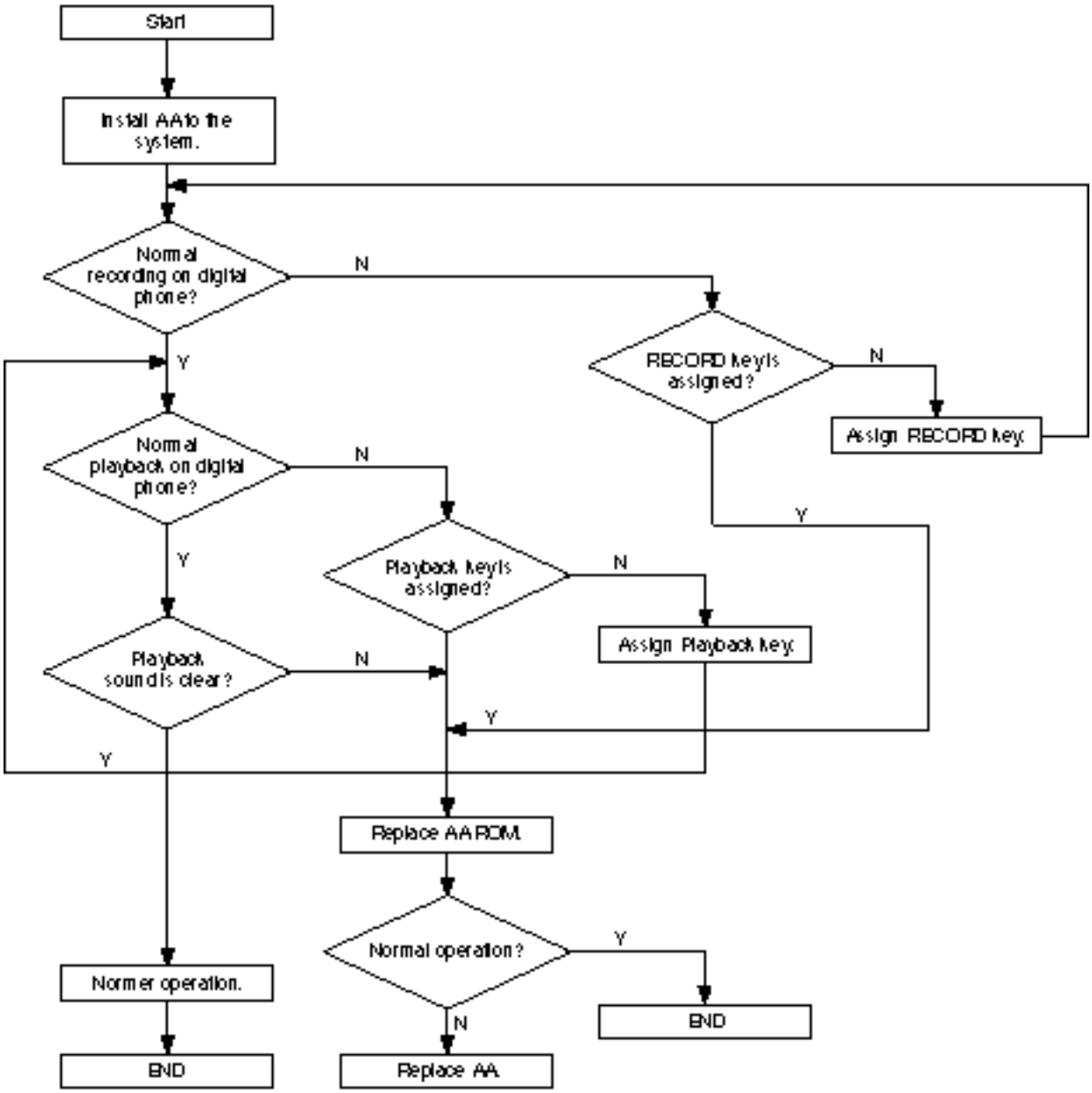
CONTROLLER: SBS9401 OR STL7053

4-2-13 AC15 Troubleshooting

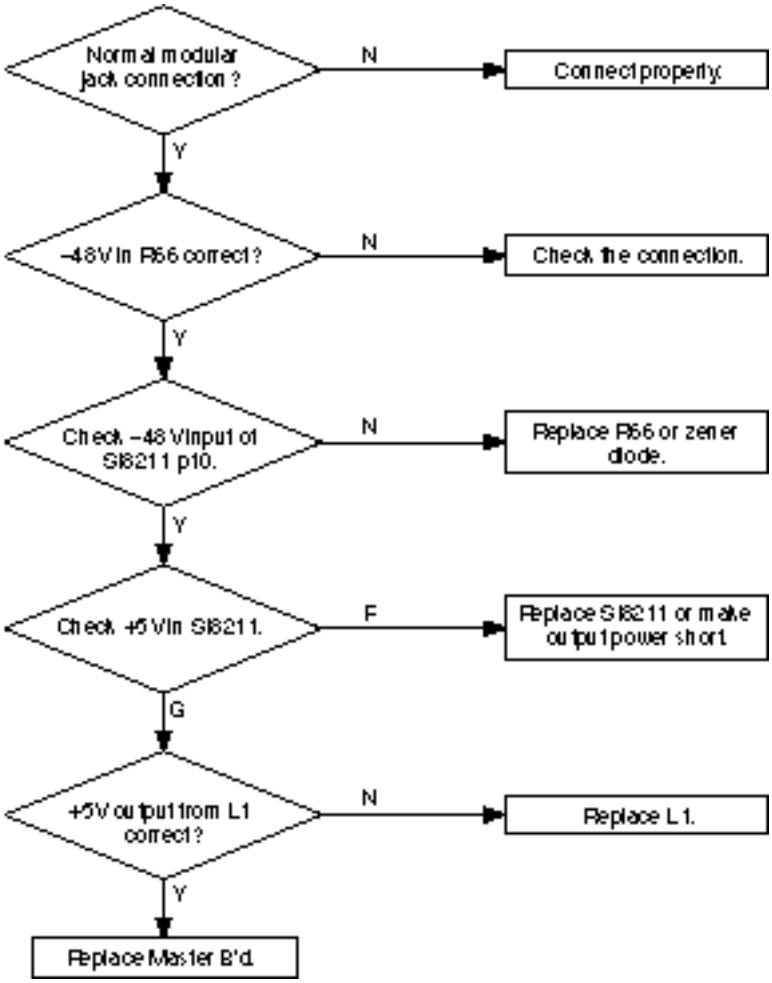



A
Normal calling operation?
N
Check normal speech path.
N
Check the E & M wire
Y
Check all Timming
Y
When finished, the phone resets?
N
Correct Dial type?
N
Set the proper type and retest
Y
Check the problem of MMC.
Y
Connect AC15 port to the line and use it
END

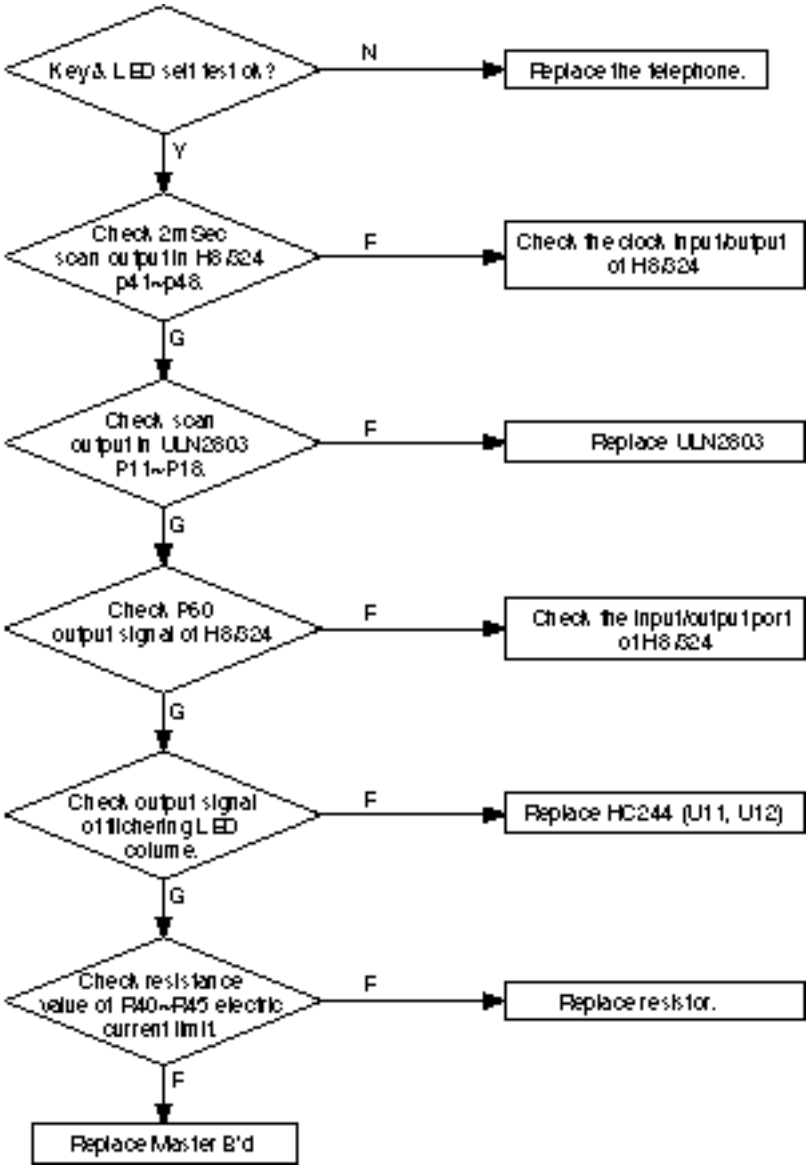
4-2-14 AA Troubleshooting



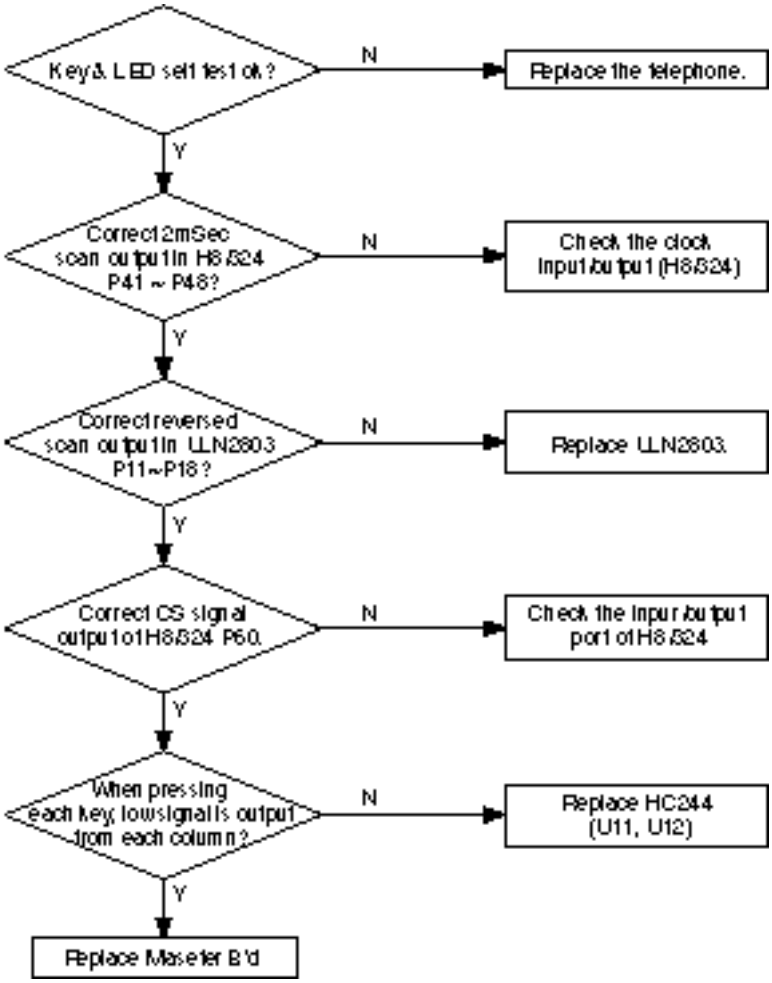
4-2-15 No Digitalphone Power



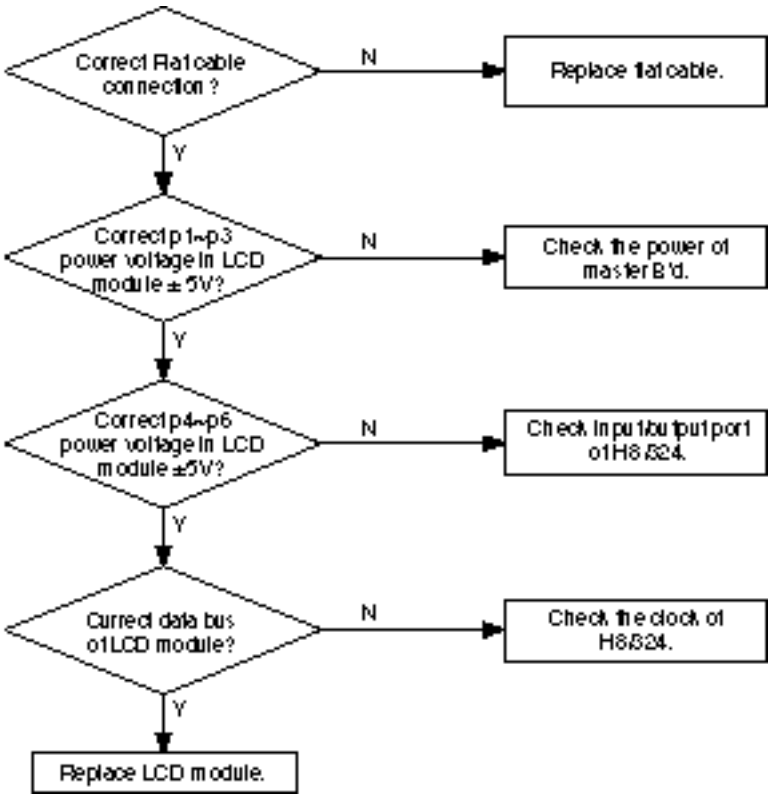
4-2-16 Abnormal Key of Digitalphone



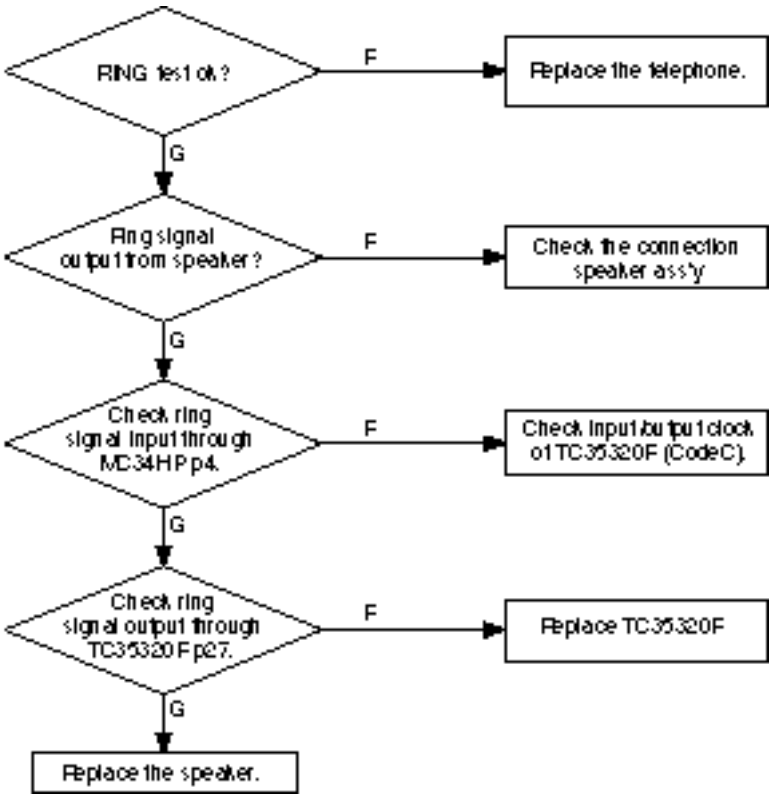
4-2-17 Digitalphone Key Operation Failure



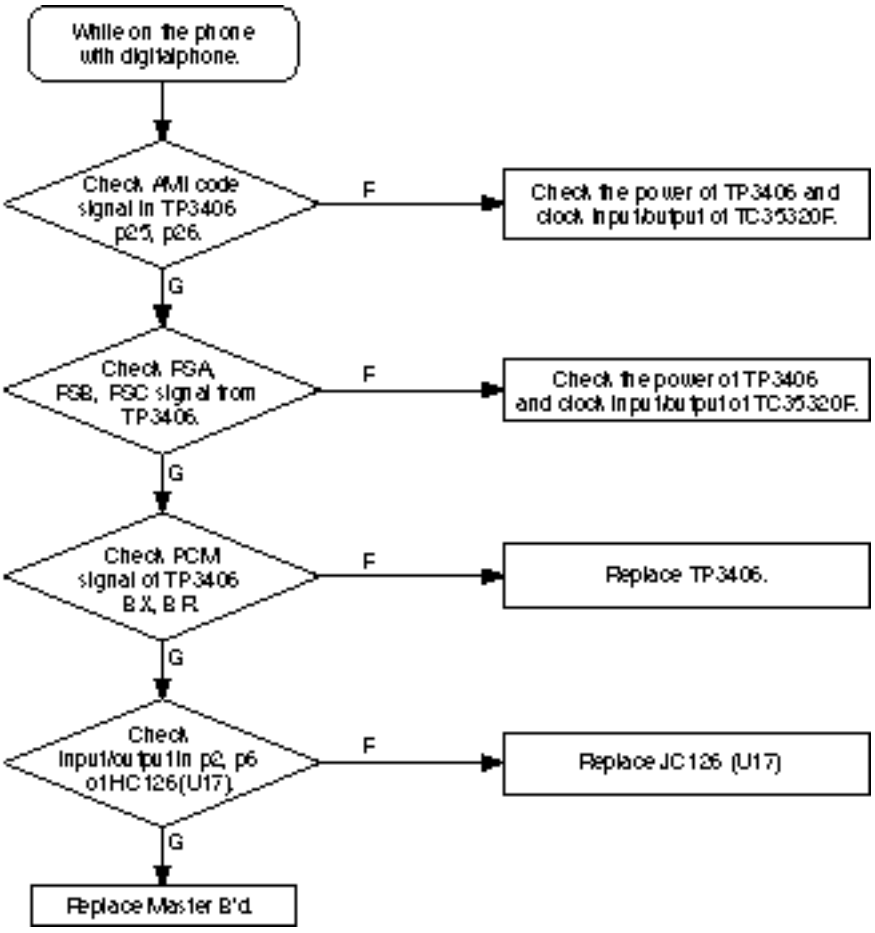
4-2-18 LCD Display Misoperation



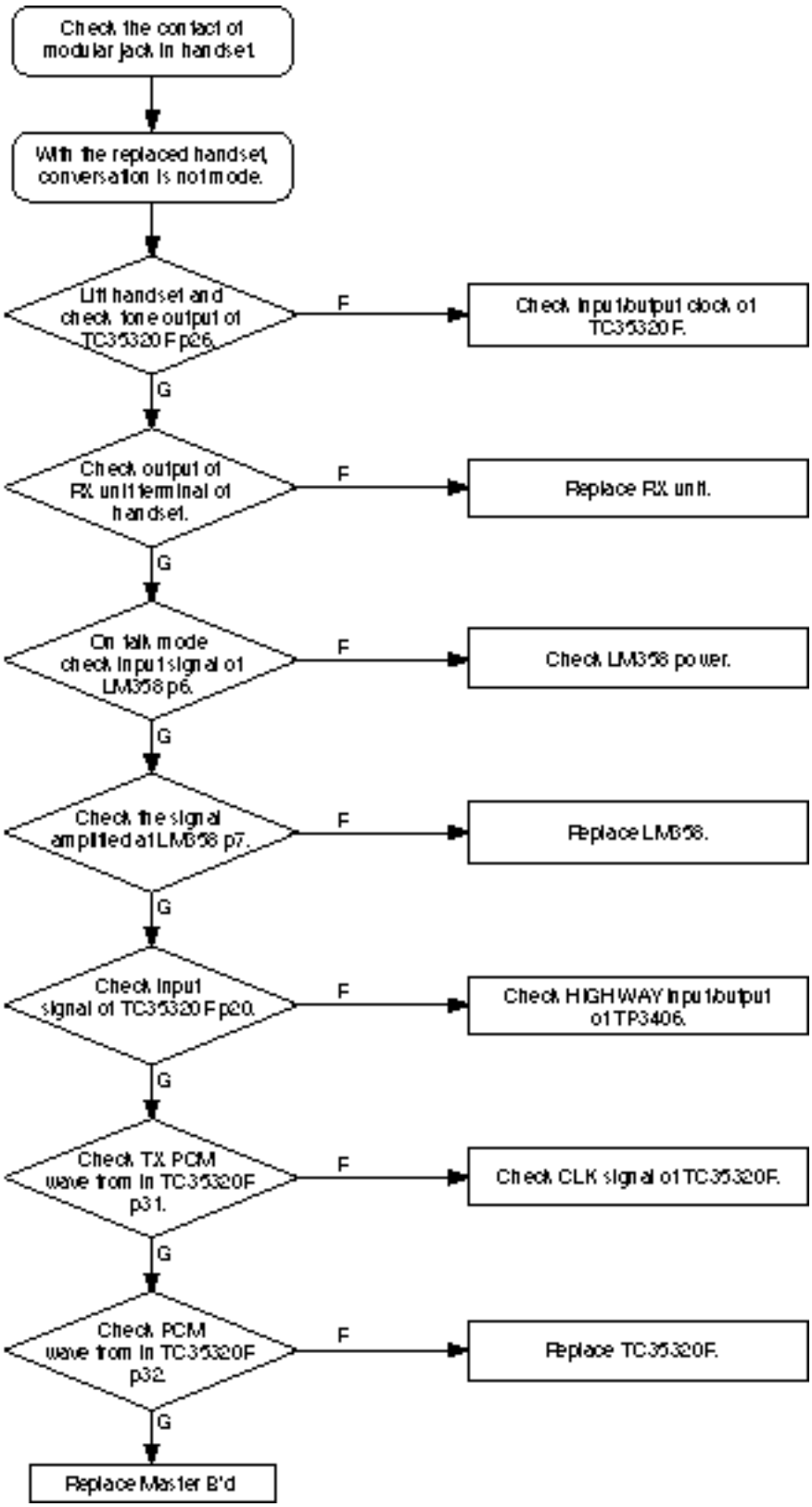
4-2-19 Abnormal Digitalphone Ring



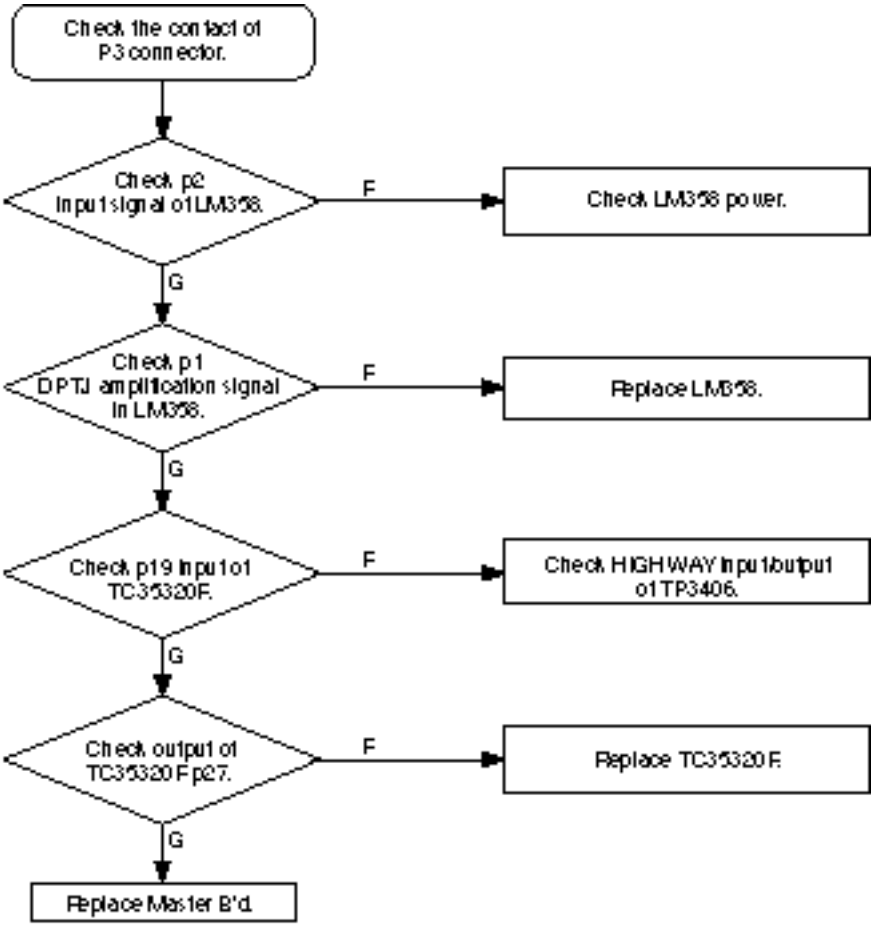
4-2-20 Digitalphone Voice Conversatiion Misoperation



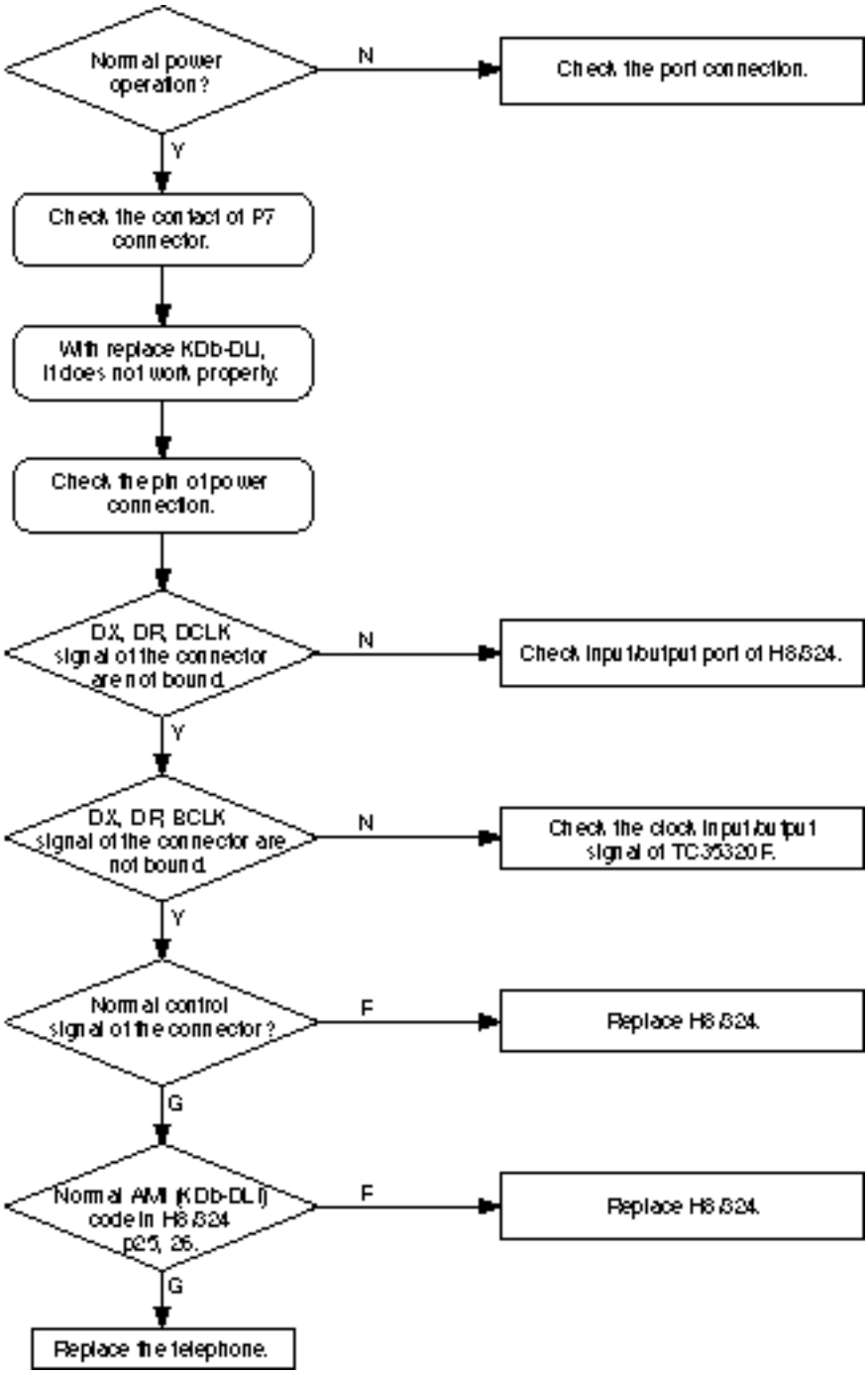
4-2-21 Handset Conversation Misoperation (Speakerphone is normal)



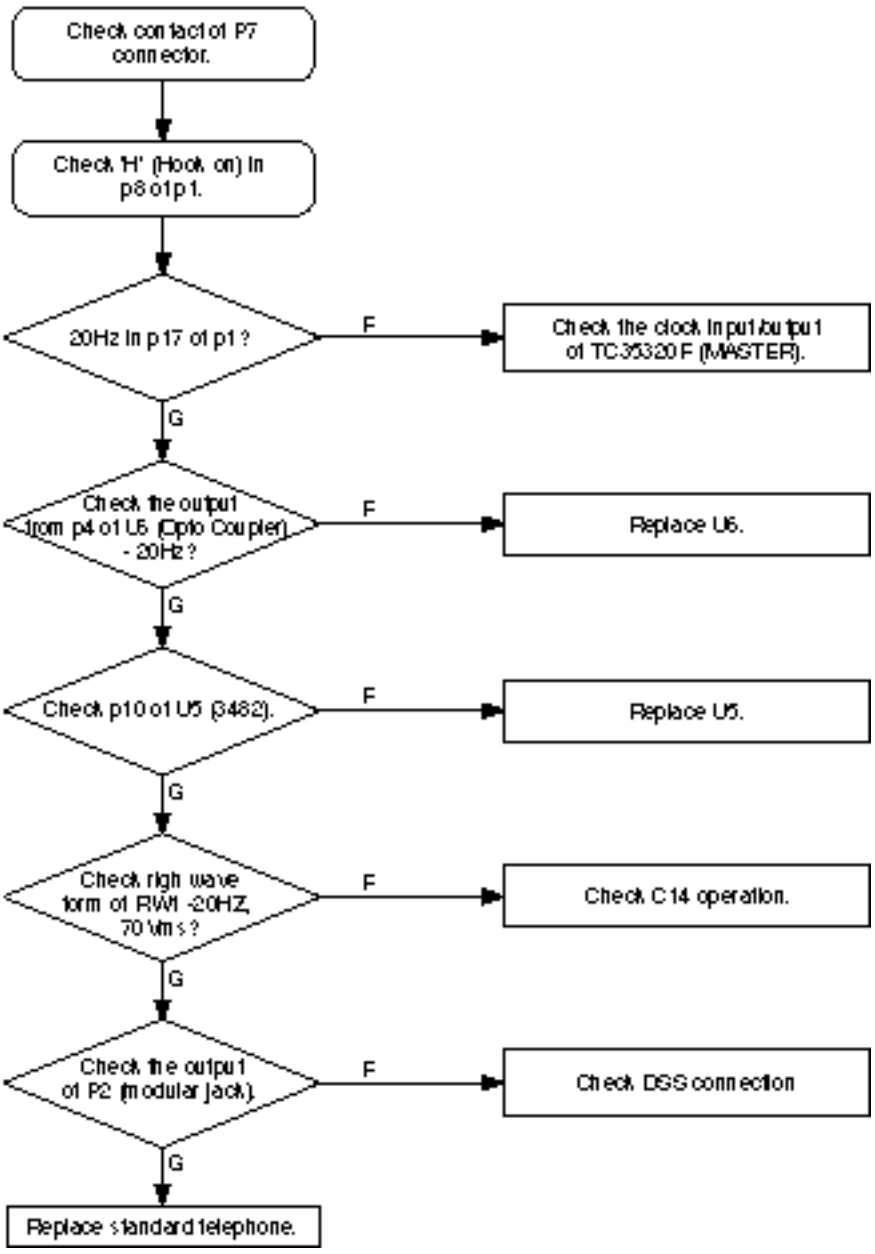
4-2-22 Speakerphone Misoperation



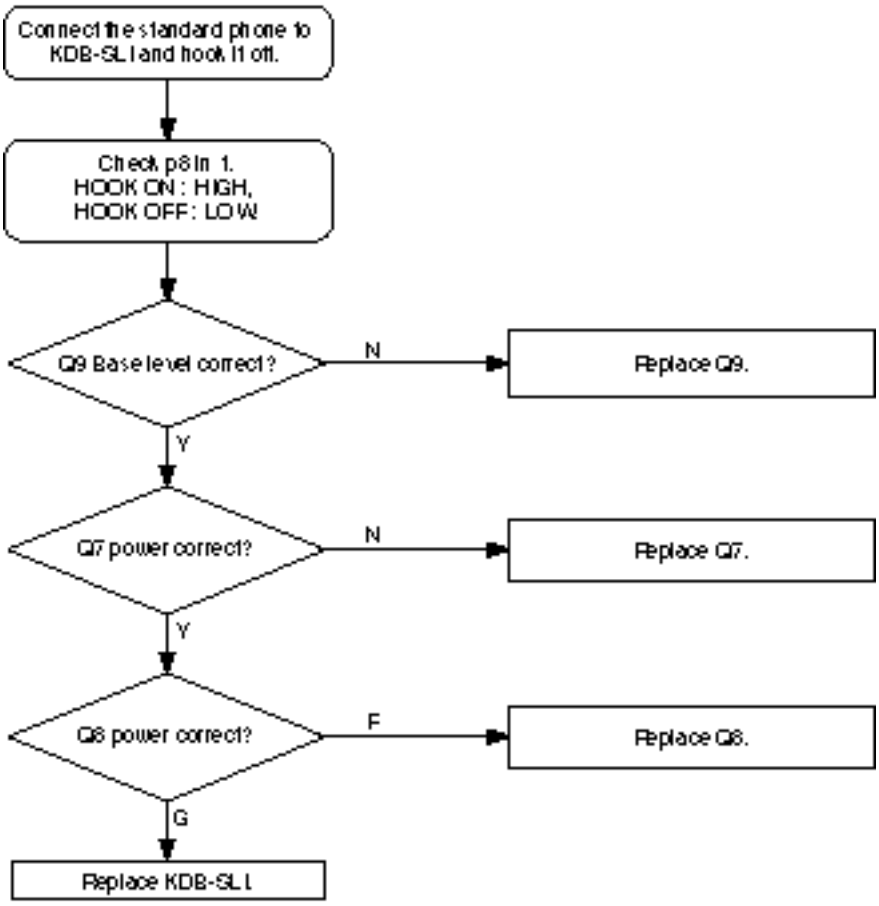
4-2-23 2B Digitalphone Misoperation



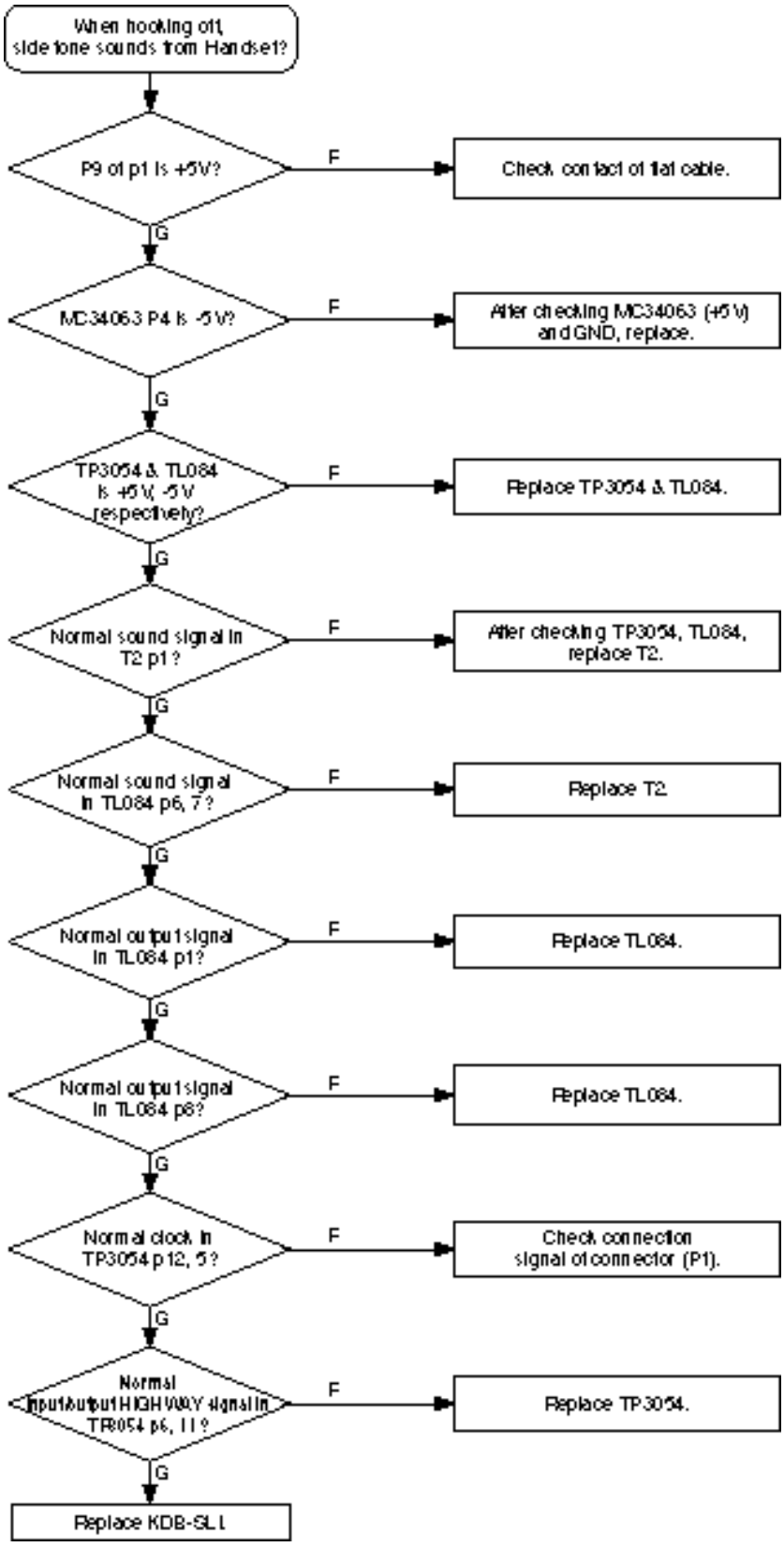
4-2-24 Abnormal Ring Operation of 2B Standardphone



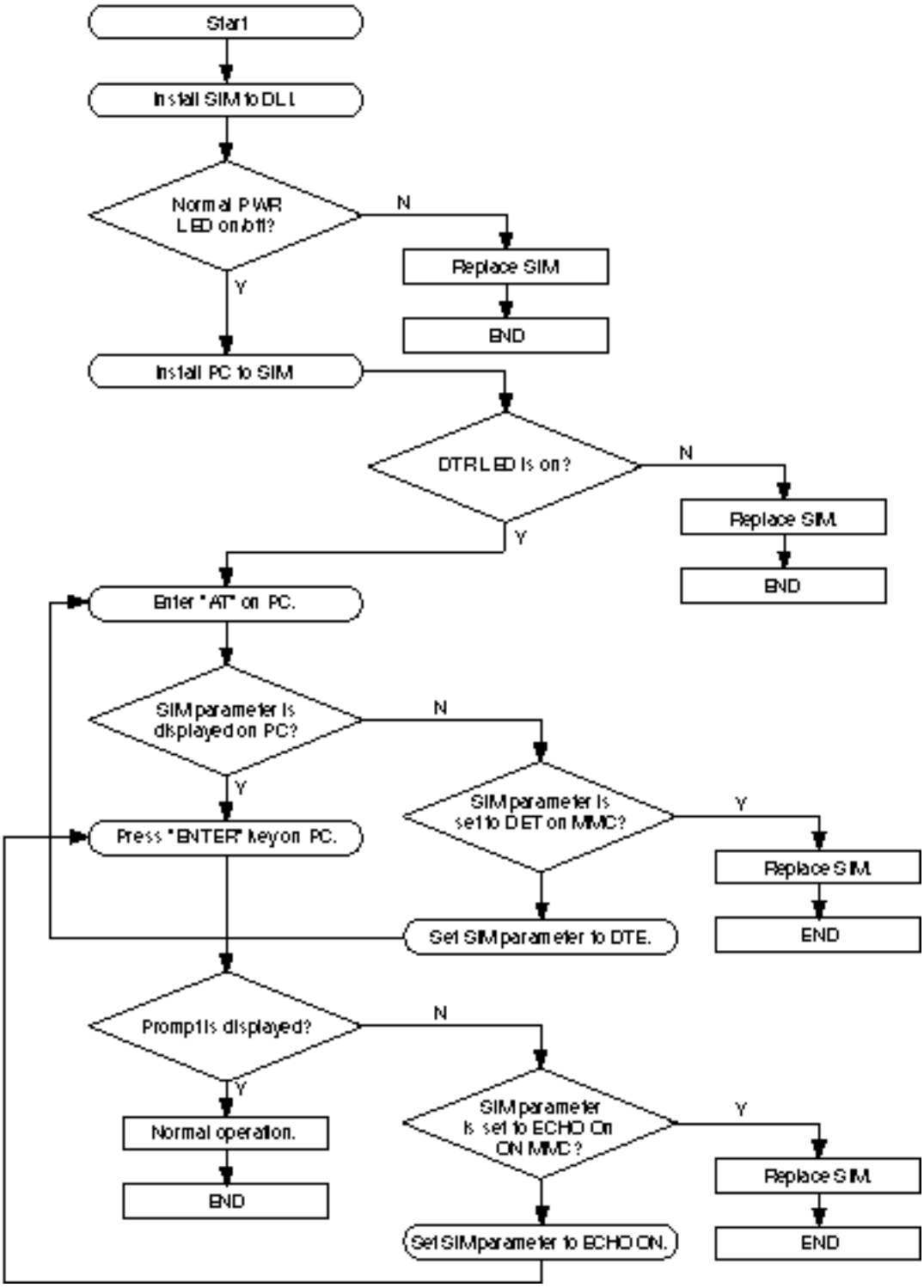
4-2-25 Abnormal Hook Detection of 2B Standardphone



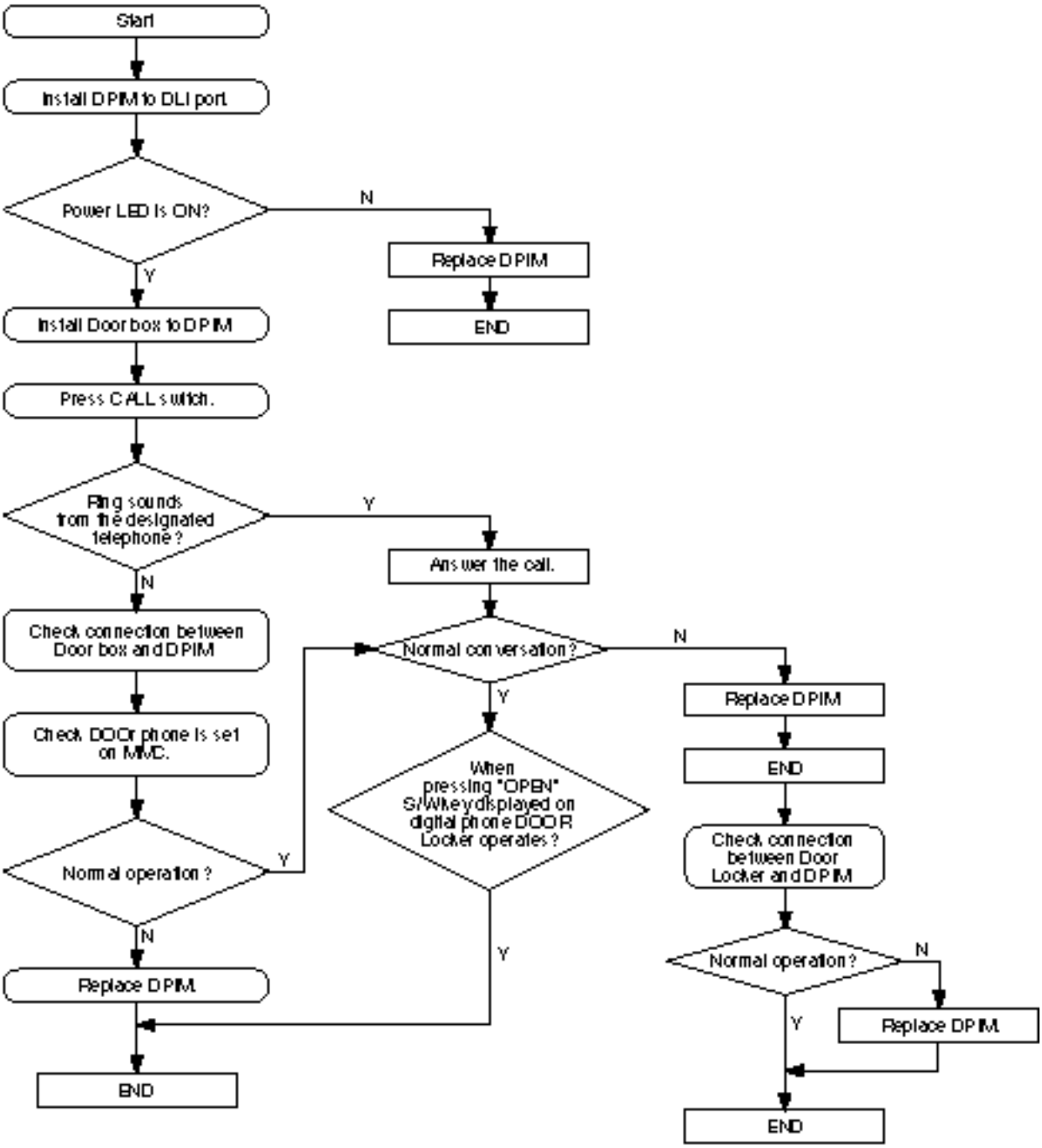
4-2-26 2B Standardphone Speech Path Failure



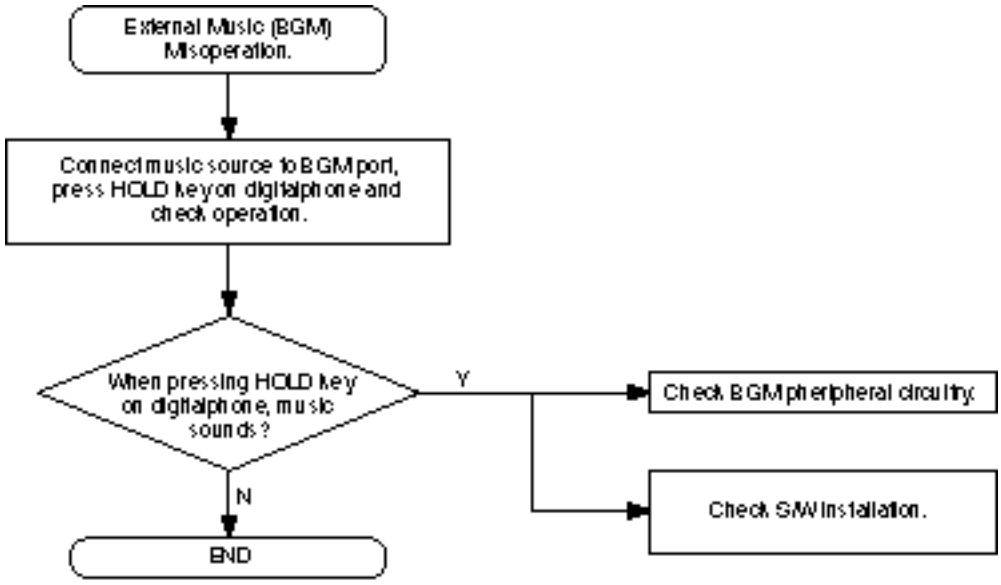
4-2-27 SIM Troubleshooting



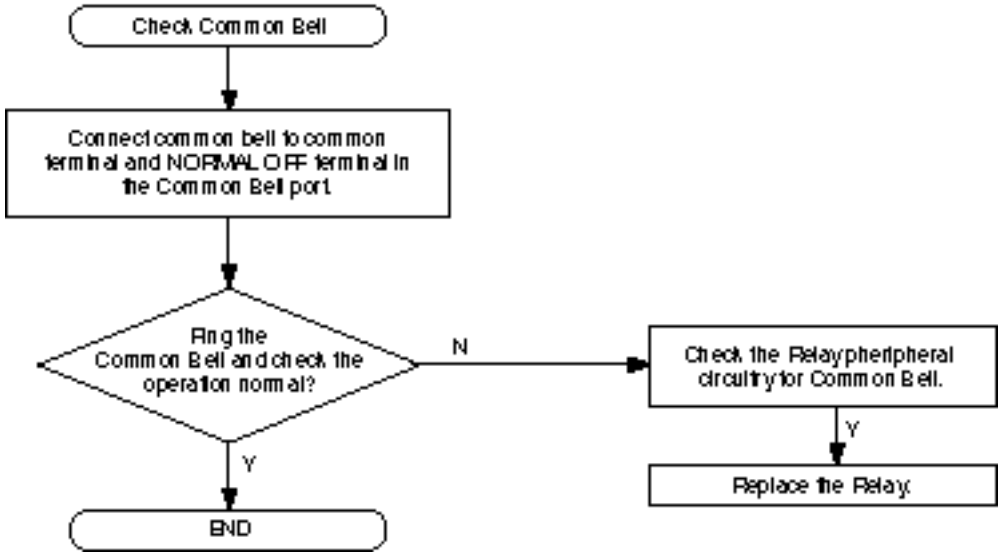
4-2-28 DPIM Troubleshooting



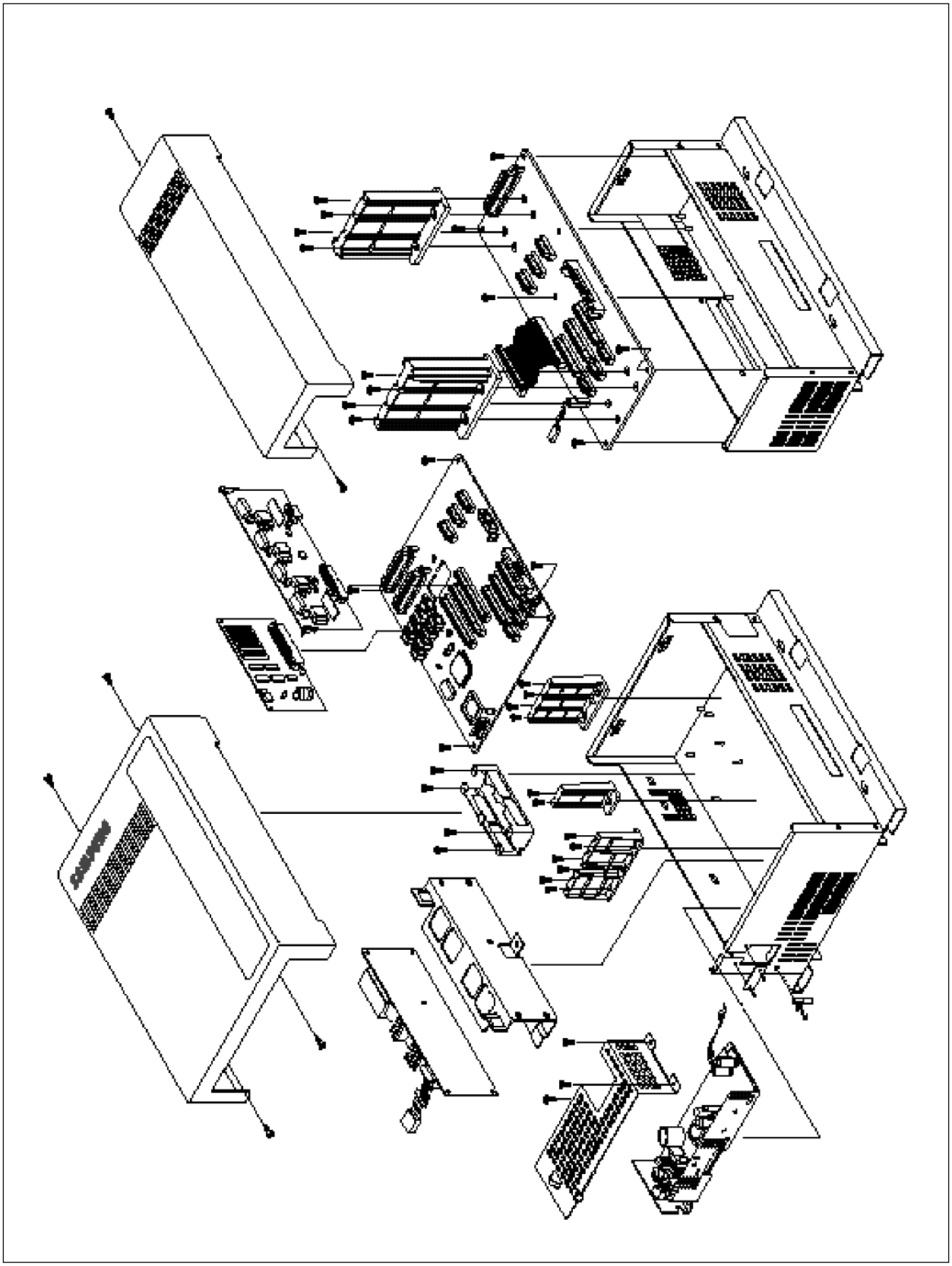
4-2-29 External Music Operation Failure


External Music (BGM) Misoperation.
Connect music source to BGM port, press HOLD key on digitalphone and check operation.
When pressing HOLD key on digitalphone, music sounds?
Y
N
Check BGM pheripheral circuitry.
Check S/W Installation.
END

4-2-30 Common Bell Operation Failure


Check Common Bell
Connect common bell to common terminal and NORMAL OFF terminal in the Common Bell port
Ring the Common Bell and check the operation normal?
N
Y
Check the Relay pheripheral circuitry for Common Bell.
Y
Replace the Relay.
END

1-5 Exploded View



Chapter 6

Part List

6-1 008 BASE BOARD.....6-3

6-2 Expansion PBA Component List.....6-8

6-3 3TRK PBA Component List 6-9

6-4 6TRK PBA Component List.....6-11

6-5 8DLI PBA Component List.....6-13

6-6 8SLI PBA Component List.....6-15

6-7 MISC1 PBA Component List.....6-17

6-8 PLL PBA Component List.....6-19

6-9 4S0T0 PBA Component List.....6-21

6-10 MODEM PBA Component List.....6-24

6-1 008 BASE BOARD

LEVEL	PART NO	SPEC	Q°ØTY	LOCATION
0	KP1240MAUK	GE055:	0001.000	
.1	GA68-	LABEL(R)-PLUS2:COMPACT PL	0001.000	
.1	30677A	LABEL(R)-TUV, CE:COMPACT 2	0001.00	
.1	GA68-	PBA-P 008BASE PCB:COMP PL	0001.000	
..2	30689A	TRANS-AF:INFOREX,-,800mH	0002.000	T1,T6
..2	GA92-	COIL-RF:INFOREX, 35UH,-,40	0002.000	L2,L3
..2	01552A	TRANS-PULSE:DGP 360, 144/ /	0008.000	T2-5, 7-10
..2	EC26-20501A	PRA-P 008BASE AUTO:P-008	0001.000	PRA
...3	EC27-30514A	IC-ASIC:DECT, TP3404, PLCC,	0002.000	U3, U4
...3	GA26-	IC-ASIC:DCS COMPACT, STC96	0001.000	U10
...3	10053A	PCB-008BASE:COMPACT PLUS,	0001.000	PCB
...3	GA94-	DIODE-SWITCHING:HSK 120, 60	0012.000	D1-4, 6-9, 12, 13,
...3	01251A	DIODE-SWITCHING:HSK 120, 60	0006.000	16, 20
...3	EN13-10502A	DIODE-SWITCHING:HSK 120, 60	0001.000	D21, 22, 24, 25, 28,
...3	GA13-	DIODE-SWITCHING:HSK 120, 60	0002.000	29
...3	10579A	DIODE-RECTIFIER:1N5819, 40	0001.000	D32
...3	GA41-	DIODE-RECTIFIER:RLR4003, 2	0001.000	D10, 11
...3	11011A	DIODE-ZENER:RLZ3.6A, 3.6V,	0006.000	D36
...3	0401-000128	DIODE-ZENER:RLZ3.6A, 3.6V,	0006.000	D37
...3	0401-000128	DIODE-ZENER:RLZ3.6A, 3.6V,	0004.000	ZD5, 10, 11, 14, 15,
...3	0401-000128	TR-SMALL SIGNAL:KST5401TA	0001.000	17
...3	0401-000128	TR-SMALL SIGNAL:MMBT5550,	0002.000	ZD18, 19, 23, 26,
...3	0402-000165	IC-COMS LOGIC:74HC08, AND	0002.000	27, 30
...3	0402-000305	IC-COMS LOGIC:74HC08, AND	0002.000	ZD31, 33, 34, 35
...3	0403-000308	IC-COMS LOGIC:74HC08, AND	0001.000	Q3
...3	0403-000308	IC-COMS LOGIC:74HC04, INVE	0001.000	Q1, Q4
...3	0403-000308	IC-COMS LOGIC:74HC32, OR G	0005.000	U12, U13
...3	0501-000476	IC-COMS LOGIC:74HC74, D FL	0001.000	U30, U31
...3	0501-000477	IC-COMS LOGIC:74HC138, 3-T	0001.000	U38
...3	0801-000388	IC-COMS LOGIC:74HC148, PRI	0001.000	U23
...3	0801-000388	IC-COMS LOGIC:74HC245, TRA	0001.000	U11, 16, 17, 18, 26
...3	0801-000388	IC-COMS LOGIC:74HC125, BUF	0003.000	U37
...3	0801-000397	IC-COMS LOGIC:74HC541, BUF	0003.000	U35
...3	0801-000411	IC-COMS LOGIC:74HC541, BUF	0001.000	U32
...3	0801-000455	IC-COMS LOGIC:74HC4051, MU	0001.000	U14
...3	0801-000642	IC-COMS LOGIC:74HC74, MU	0001.000	U5, U6, U9
...3	0801-000671	IC-COMS LOGIC:74HC164, SHI	0001.000	U14, U19, U20
...3	0801-000696	IC-COMS LOGIC:74HC244, BUF	0001.000	U29
...3	0801-000702	IC-TTL:74LS08, AND GATE, SO	0001.000	U33

LEVEL	PART NO	SPEC	Q°ØTY	LOCATION
...3	1201-000197	IC-OP AMP:34072, SOP, 8P, 15	0002.000	U1, 36
...3	1201-000197	IC-OP AMP:34072, SOP, 8P, 15	0001.000	U28
...3	1203-000404	IC-DC/ DC CONVERTER:34063,	0001.000	U21
...3	1205-000394	IC-CODEC/ FILTER:TP3057WM,	0001.000	U8
...3	1404-000126	THERMISTOR:4.85ohm, -, -, -,	0008.000	PS1-8
...3	2002-000262	R-COMPOSITION:6.2Kohm, 5%	0001.000	R289
...3	2003-000201	R-METAL OXIDE:2.2Kohm, 5%	0001.000	R290
...3	2007-000003	R-CHIP:43Kohm, 5%, 1/10W, DA	0001.000	R17
...3	2007-000026	R-CHIP:200ohm, 5%, 1/10W, DA	0005.000	R159, 162, 164,
...3	2007-000026	R-CHIP:200ohm, 5%, 1/10W, DA	0005.000	165, 166
...3	2007-000026	R-CHIP:200ohm, 5%, 1/10W, DA	0005.000	R168, 172, 174,
...3	2007-000026	R-CHIP:200ohm, 5%, 1/10W, DA	0001.000	180, 185
...3	2007-000029	R-CHIP:0ohm, 5%, 1/10W, DA, T	0003.000	R187, 189, 192,
...3	2007-000068	R-CHIP:470Kohm, 5%, 1/10W, D	0002.000	196, 203
...3	2007-000282	R-CHIP:100Kohm, 5%, 1/10W, D	0004.000	R209
...3	2007-000282	R-CHIP:100Kohm, 5%, 1/10W, D	0004.000	R34, 37, 251
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0011.000	R282, 283
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0006.000	R1, 18, 46, 281
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0006.000	R241-244
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0006.000	R3, 7-10, 12, 20-
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0005.000	23, 45
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0005.000	R53, 55, 57, 58, 61,
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0005.000	68
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0006.000	R71, 73, 74, 78, 81,
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0022.000	82
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0005.000	R84, 85, 88, 90, 91,
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0005.000	94
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0010.000	R95, 96, 100, 105,
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0009.000	106
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0019.000	R108, 109, 111,
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0005.000	112, 113
...3	2007-000290	R-CHIP:100ohm, 5%, 1/10W, DA	0009.000	R117, 123, 124,
...3	2007-000300	R-CHIP:10Kohm, 5%, 1/10W, DA	0009.000	125, 126
...3	2007-000300	R-CHIP:10Kohm, 5%, 1/10W, DA	0006.000	R127-129, 132,
...3	2007-000300	R-CHIP:10Kohm, 5%, 1/10W, DA	0005.000	137, 139
...3	2007-000300	R-CHIP:10Kohm, 5%, 1/10W, DA	0007.000	R140-158, 160,
...3	2007-000300	R-CHIP:10Kohm, 5%, 1/10W, DA	0005.000	161, 163
...3	2007-000300	R-CHIP:10Kohm, 5%, 1/10W, DA	0009.000	R167, 173, 179,
...3	2007-000300	R-CHIP:10Kohm, 5%, 1/10W, DA	0004.000	182, 183
...3	2007-000355	R-CHIP:12Kohm, 5%, 1/10W, DA	0002.000	R184, 186, 188,
...3	2007-000468	R-CHIP:1Kohm, 5%, 1/10W, DA,	0007.000	190, 191
...3	2007-000468	R-CHIP:1Kohm, 5%, 1/10W, DA,	0005.000	R193-195, 197-
...3	2007-000468	R-CHIP:1Kohm, 5%, 1/10W, DA,	0004.000	202, 204
...3	2007-000483	R-CHIP:1ohm, 5%, 1/10W, DA, T	0002.000	R205-208, 210-
	2007-000483	R-CHIP:1ohm, 5%, 1/10W, DA, T		

LEVEL	PART NO	SPEC	Q°ØTY	LOCATION
...3	2007-000493	R-CHIP:2.2Kohm, 5%, 1/10W, D	0008.000	R32, 35, 42-44, 50-
...3	2007-000493	R-CHIP:2.2Kohm, 5%, 1/10W, D	0006.000	52
...3	2007-000493	R-CHIP:2.2Kohm, 5%, 1/10W, D	0006.000	R54, 56, 59, 60, 72,
...3	2007-000493	R-CHIP:2.2Kohm, 5%, 1/10W, DA,	0002.000	75
...3	2007-000532	D	0001.000	R77, 87, 93, 99,
...3	2007-000586	R-CHIP:200Kohm, 5%, 1/10W, DA	0001.000	101, 115
...3	2007-000615	R-CHIP:22Kohm, 5%, 1/10W, DA	0001.000	R119, 121
...3	2007-000635	R-CHIP:24Kohm, 5%, 1/10W, DA	0002.000	R15
...3	2007-000738	R-CHIP:270Kohm, 5%, 1/10W, DA	0001.000	R285
...3	2007-000798	R-CHIP:30Kohm, 5%, 1/10W, DA	0002.000	R47
...3	2007-000830	R-CHIP:360Kohm, 5%, 1/10W, DA	0001.000	R284, 287
...3	2007-000844	R-CHIP:39Kohm, 5%, 1/10W, DA	0001.000	R19
...3	2007-000872	R-CHIP:3Kohm, 5%, 1/10W, DA	0003.000	R11, R14
...3	2007-000931	R-CHIP:4.7Kohm, 5%, 1/10W, D	0001.000	R48
...3	2007-001009	R-CHIP:470ohm, 5%, 1/10W, DA	0001.000	R171
...3	2007-001097	R-CHIP:51Kohm, 5%, 1/10W, DA	0001.000	R28, R30, R286
...3	2007-007158	R-CHIP:62Kohm, 5%, 1/10W, DA	0001.000	R38
...3	2203-000206	R-CHIP:226Kohm, 1%, 1/10W, DA	0006.000	R4
...3	2203-000206	C-CERAMIC, CHIP:100nF, 10%,	0006.000	R16
...3	2203-000206	C-CERAMIC, CHIP:100nF, 10%,	0008.000	R13
...3	2203-000206	C-CERAMIC, CHIP:100nF, 10%,	0022.000	C10, 13, 16, 18, 29,
...3	2203-000206	C-CERAMIC, CHIP:100nF, 10%,	0035.000	32
...3	2203-000260	C-CERAMIC, CHIP:100nF, 10%,	0005.000	C35, 37, 59, 65, 71,
...3	2203-000436	C-CERAMIC, CHIP:10nF, 10%, 5	0016.000	72
...3	2203-000436	C-CERAMIC, CHIP:1nF, 10%, 5	0001.000	C73, 77-79, 81, 83-
...3	2203-000476	C-CERAMIC, CHIP:1nF, 10%, 5	0007.000	85
...3	2203+000476	C-CERAMIC, CHIP:1uF, +80, -20	0007.000	BC10BC16, BC18-
...3	2203-000476	C-CERAMIC, CHIP:1uF, +80, -20	0003.000	BC23
...3	2203-000595	C-CERAMIC, CHIP:1uF, +80, -20	0001.000	BC25-59
...3	2203-000992	C-CERAMIC, CHIP:220pF, 5%, 5	0010.000	C1, 43, 52, 67, 87
...3	2203-001105	C-CERAMIC, CHIP:47pF, 10%, 5	00001.000	BC17, BC24, BC60-
...3	2203-001229	C-CERAMIC, CHIP:6.8nF, 5%, 5	0001.000	BC73
...3	2203-	C-CERAMIC, CHIP:820pF, 5%, 5	0006.000	C91
...3	0001453	C-CERAMIC, CHIP:100pF, 5%, 5	0006.000	C7, 8, 9, 11, 12,
...3	2203-	C-CERAMIC, CHIP:100pF, 5%, 5	0002.000	14, 15
...3	0001453	C-CERAMIC, CHIP:100pF, 5%, 5	0002.000	C17, 26-28, 30, 31,
...3	2203-	C-CERAMIC, CHIP:100pF, 5%, 5	0004.000	33
...3	0001453	C-CERAMIC, CHIP:100pF, 5%, 5	0008.000	C34, 36
...3	2203-	C-FILM, MPEF:470nF, 10% 250	0003.000	C66
...3	0001453	C-AL:2.2uF, 20%, 50V, BP, 6*1	0001.000	BC74-BC81, BC97,
...3	2203-	C-AL, SMD:1uF, 20%,50V, -, 3.	0001.000	BC98
...3	0001453	C-AL, SMD:1uF, 20%,50V, -, 3.	0001.000	C92
...3	2305-000583	C-AL, SMD:1uF, 20%, 6.3V, -	0002.000	C19
...3	2401-000649	C-AL, SMD:10uF, 20%, 16V, GP	0002.000	C55, 56, 58, 61, 62,

LEVEL	PART NO	SPEC	Q°ØTY	LOCATION
...3	2901-000195	FILTER-EMI ON BOARD:50V, 1	0001.000	B5
...3	3301-000345	CORE-FILTER BEAD:ZZ, 3.5x	0003.000	B1, B2, B3
..2	JF27-60051A	COIL-FILTER:CF5400, 60UF, 5	0001.000	L1
..2	JF27-60051A	COIL-FILTER:CF5400, 60UF, 5	0004.000	L4, 5, 6, 7
..2	2401-001661	C-AL:68uF, 20%, 100V, GP, 10x	0001.000	C69
..2	2804-000146	OSCILLATOR-CLOCK:16.384MH	0001.000	X1
..2	3501-000210	RELAY-MINIATURE:5V, 98mW, 2	0001.000	K1
..2	3702-000172	CONNECTOR-RIBBON:50P, FEMA	0002.000	P1, P2
..2	3703-000121	CONNECTOR-DIN:20P, 2R, FEMA	0003.000	P14, 15, 16
..2	3703-000176	CONNECTOR-DIN:50P, 2R, FEMA	0003.000	P17, 18, 19
..2	3703-000184	CONNECTOR-DIN:64P, 2R, FEMA	0003.000	P3, P4, P5
..2	3703-000236	CONNECTOR-DIN:10P, 2R, FEMA	0003.000	P20, 21, 22
..2	3710-000107	CONNECTOR-SHUNT:2P, 1R, 2.5	0001.000	S1
..2	3711-000171	CONNECTOR-HEADER:1WALL, 2P	0001.000	P8
..2	3711-000171	CONNECTOR-HEADER:1WALL, 2P	0001.000	P12
..2	3711-000236	CONNECTOR-HEADER:1WALL, 4P	0001.000	P11
..2	3711-001025	CONNECTOR-HEADER:BOX, 64P,	0001.000	P6
..2	3711-001479	CONNECTOR-HEADER:NOWALL, 3	0001.000	S1
..2	3711-003455	CONNECTOR-HEADER:1WALL, 14	0002.000	P9, P10
.1	GA92-	PBA-P MEM PCB:COMPACT PLU	0001.000	
..2	01553A	EJECTOR-PCB MISC:DCS, NYLO	0002.000	
..2	GA61-	LED HOLDER-PBA:PC, 9,7X7.5	0001.000	
..2	10503A	LABEL(P)-MEM:COMPACT PLUS	0002.000	PRA
..2	GA67-	PRA-P MEM AUTO:COMP PLUS	0001.000	PRA
...3	30506A	IC-ASIC:DCS COMPACT, STC96	0001.000	U10
...3	GA68-	PCB-MEM:COMPACT PLUS, FR-4	0001.000	PCB
...3	11452A	IC-COMS LOGIC:74HC74, D FL	0001.000	U7
...3	GA94-	IC-COMS LOGIC:74HC138, 3-T	0001.000	U11
...3	01245A	IC-REAL TIME CLOCK:72423,	0001.000	U12
...3	GA13-	IC-SRAM:681000, 128KX8BIT,	0004.000	U1, U2, U8, U9
...3	10579A	R-CHIP:300Kohm, 5%, 1/10W, D	0001.000	R6
...3	GA41-	R-CHIP:100ohm, 5%, 1/10W, DA	0003.000	R4, R5, R8
...3	11018A	R-CHIP:10Kohm, 5%, 1/10W, DA	0002.000	R2, R7
...3	0801-000455	R-CHIP:330ohm, 5%, 1/10W, DA	0002.000	R1, R3
...3	0801-000642	R-CHIP:226Kohm, 5%, 1/10W, D	0001.000	R58
...3	0909-000105	C-CERAMIC, CHIP:100uF, 10%	0001.000	C1-C9, C11-C13,
...3	1106-000141	C-AL, SMD:10uF, 20%, 16V, GP,	0002.000	C15
...3	2007-000027	SWITCH-TACT:12V, 50mA, 160g	0001.000	C10, C14
..2	2007-000290	DIODE-RECTIFIER:1N5819, 40	0003.000	SW1
..2	2007-000300	LED:ROUND, RED, 5mm, 700nm	0001.000	D1, D2, D3
..2	2007-000766	IC-EPROM:27C4001, 512KX8BI	0004.000	LED1
..2	2007-007158	IC-VOLTAGE COMP.:1232, DIP	0001.000	U3, 4, 5, 6
..2	2203-000206	SWITCH-SLIDE:30V, 300mA, DP	0001.000	U10
..2	2402-000176	CONNECTOR-DIN:64P, 2R, MALE	0001.000	SW2
	3404-001025			

LEVEL	PART NO	SPEC	Q°ØTY	LOCATION
..2	4302-000126	BATTERY-NICD(2ND):3.6V;1.	0001.000	BT1
.1	GA97-	MEA-UPPER ASSY A:DC824, -	0001.000	
..2	01555A	IPR-UPPER(BASIC):COMPACT	0001.000	
..2	GA70-	RCT-PAD B PBA:DCS824, -	0001.000	
.1	10733A	MEA-LOWER ASSY A:DCS824,.	0001.000	
..2	GA73-	IPR-BRACKET DUMMY:COMPACT	0001.000	
..2	30003A	IPR-COVER POWER COMPACT P	0001.000	
..2	GA97-	PMO-GUIDE MEM:COMPACT PLU	0001.000	
..2	01557A	PMO-GUIDE TRK:COMPACT PLU	0001.000	
..2	GA70-	PMO-GUIDE MISC:COMPACT PL	0001.000	
..2	10735A	MEC-LOWER ASSY:DCS824, KOR	0001.000	
...3	GA70-	IPR-LOWER(BASIC):KEPLER, P	0001.000	
...3	10740A	IPR-WALL BRACKET:COMPACT	0002.000	
..2	GA72-	SCEW-MACHINE:PH, +, M4, L10	0013.000	
..2	41208A	SCEW-MACHINE:PH, +, M4, L10	0001.000	
..2	GA72-	MEC-LOWER ASSY:PWH, +, S, M3,	0016.000	
..2	41209A	WASHER-E.T:M6, ID6.4, OD11,	0001.000	
.1	GA72-	PAA-PASCK ASSY:DCS824,., EU	0001.000	
..2	41210A	PAC-SILICA GEL:-,60X70, 40	0001.000	
..2	GA75-	BOX(P)-UNIT KSU:UK, COMPAC	0001.000	
..2	10599A	CUSHION-TOP (BASIC):KOR, C	0001.000	
..2	GA70-	CUSHION-BOTTOM (BAS:KOR, C	0001.000	
..2	10732A	BAG-PE. TO. 07. 500X10X55	0001.000	
..2	GA70-	LABEL(P)-CE MARK:SF500, AR	0002.000	
.1	10734A	IC-EPROM:27C4001, 512KX8BI	0004.000	
	6001-000575			
	6001-000640			
	6003-000267			
	6031-000129			
	GA99-			
	00947A			
	EA69-90513A			
	GA69-			
	11238A			
	GA69-			
	20665A			
	GA69-			
	20666A			
	GA69-			
	30514A			
	JF68-10549A			
	1102-000163			

6-2 Expansion PBA Component List

LEVEL	PART NO	SPEC	Q°ØY	LOCATION
0	KP1240MB	:	0001.000	
.1	GA39-	CBF- INTERFACE: COMPACT2, FL	0001.000	EXP_CABLE
.1	31001A	CBF- HARNESS: COMPACT2, WIRE	0001.000	FG_ASS'Y
.1	GA39-	CBF- HARNESS: COMPACT2, WIRE	0002.000	2PIN CONN
.1	41001A	PBA- P EXPBASE PCB: COMP PL	0001.000	
..2	GA39-	PCB- EXP BASE: COMPACT PLUS	0001.000	PCB
..2	41004A	CONNECTOR- RIBBON: 50P, FEMA	0001.000	P5
..2	GA92-	CONNECTOR- DIN: 20P, 2R, FEMA	0003.000	P11, 21, 31
..2	01557A	CONNECTOR- DIN: 50P, 2R, FEMA	0003.000	P12, 22, 32
..2	GA41-	CONNECTOR- DIN: 10P, 2R, FEMA	0003.000	P13, 23, 33
..2	11012A	CONNECTOR- HEADER: 1WALL, 2P	0002.000	P8, P14
..2	3702-000172	CONNECTOR- HEADER: BOX, 64P,	0001.000	P6
..2	3703-000121	CONNECTOR- HEADERL- , 60P, 2R	0001.000	P4
.1	0703-000176	MEA- UPPER ASSY B: DCS824, -	0001.000	
..2	3703-000236	IPR- WALL BRAKET: COMPACT	0001.000	
..2	3711-000171	RCT- PAD A PBA: DC824, CR S	0001.000	
.1	3711-001025	MEA0LOWER ASSY B: DCS824, -	0001.000	
..2	3711-002011	PMO- GUIDE OPTION: COMPACT	0002.000	
..2	GA97-	MEC- LOWER B ASSY: DCS824, K	0001.000	
...3	01554A	IPR- WALL BRACKET: COMPACT	0001.000	
...3	GA70-	IPR- LOWER(EXPENTION): COMP	0001.000	
...3	10737A	IPR- BRACKET EXP: COMPACT P	0002.000	
..2	GA73-	SCREW- MACHINE: CH, - , M5, L20	0008.000	
..2	30002A	SCREW- TAPTITEL: PWH, + , L20	0006.000	
.1	GA97-	PAA- PACK ASSY: DCS824, ., K0	0001.000	
..2	01556A	PAC- SILICA GEL: - , 60X70, 40	0001.000	
..2	GA73-	BOX(P)- UNIT(EXP): KOR, DCS/	0001.000	
..2	41211A	CUSHION- BOTTOM(EXP): KOR,	0001.000	
..2	GA75-	CUSHION- TOP(EXP): KOR, COR	0001.000	
..2	10600A	BAG- PE: PE, T0.07, 500X10X55	0001.000	
	GA70-			
	10734A			
	GA70-			
	10736A			
	GA70-			
	10738A			
	6001-000267			
	6003-000267			
	GA99-			

6-3 3TRK PBA Component List

LEVEL	PART NO	SPEC	Q°TY	LOCATION
0	KP824IB3TRK	GB055:	0001.000	
.1	UK	EJECTOR-PCB MISC:DCS, NYLO	0002.000	
.1	GA61-	LABEL(P)-3TRK:COMPACT PLU	0002.000	
.1	10503A	LABEL(P)-3TRK(PACK):COMPA	0002.000	
.1	GA68-	PBA-P 3TRK PCB:COMP PLUS	0001.000	
..2	11453A	TRANS-AF:INFOREX, -, 80mH	0003.000	T1, T2, T3
..2	GA68-	PRA-P 3TRK AUTL:COMP PLUS	0001.000	PRA
...3	11463A	IC-ASIC:DCS, STL7053A, QFP,	0001.000	U1
...3	GA92-	PCB-3TRK:COMPACT PLUS, FR-	0001.000	PCB
...3	01554A	DIODE-SWITCHING HSK120, 60	0003.000	D25, 26, 27
...3	EC26-20501A	DIODE-RECTIFIER:RLR4003, 2	0006.000	D5, 6, 11, 12, 17,
...3	GA94-	DIODE-BRIDGE:DF04S, 400V, 1	0003.000	18
...3	01246A	DIODE-ZENER:RLZ3.6A, 3.6V,	0006.000	BD1-3
..3	GA13-	DIODE-ZENER:RLZ5.1A, 5.1V,	0009.000	ZD10-ZD15
...3	10052A	DIODE-TVS:1.5KE24A, 22.8-2	0003.000	ZD1-9
...3	GA41-	TR-SMALL SIGNAL:MMBT5550,	0003.000	TVS1-3
...3	11015A	TR-POWERLKTD2058, NPN, 2W, T	0003.000	Q7-9
...3	0401-000128	PHOTO-COUPLER:TR,100-600%	0003.000	Q1-Q3
..3	0402-000305	IC-COMS LOGIC:70HC125, BUF	0002.000	U4, U5, U6
...3	0402-001047	IC-CODEC/ FILTER:TP3057WM,	0003.000	U2, U3
...3	0403-000308	VARISTOR:360V, 2500A, 17.5x	0009.00	U10-12
...3	0403-001057	R-METAL OXIDE(S):30ohm, 5%	0003.000	VA1-9
...3	0406-001014	R-CHIP:75Kohm, 5%, 1/10W, DA,	0003.000	R9, 18, 27
..3	0501-000477	T	0006.000	R33, 42, 51
...3	0502-001040	R-CHIP:0ohm, 5%, 1/10W, DA, T	0003.000	R11, 12, 20, 21, 29,
...3	0604-000102	R-CHIP:0ohm, 5%, 1/10W, DA, T	0006.000	30
...3	0801-000702	R-CHIP:100Kohm, 5%, 1/10W, D	0001.000	R121-123
...3	1205-000394	R-CHIP:100Kohm, 5%, 1/10W, D	0003.000	R58, 59, 66, 67, 72,
..3	1405-000138	R-CHIP:100Kohm, 5%, 1/10W, D	0025.000	73
...3	2003-002047	R-CHIP:100ohm, 5%, 1/10W, DA	0004.000	R115
...3	2007-000002	R-CHIP:100ohm, 5%, 1/10W, DA	0006.000	R61, 69, 75
...3	2007-000029	R-CHIP:10Kohm, 5%, 1/10W, DA	0003.000	R87-93, 97-114
...3	2007-000029	R-CHIP:12Kohm, 5%, 1/10W, DA	0003.000	R117-120
..3	2007-000282	R-CHIP:150Kohm, 5%, 1/10W, D	0001.000	R6, 15, 25, R81-83
...3	2007-000282	R-CHIP:1Kohm, 5%, 1/10W, DA,	0001.000	R37, 46, 55
...3	2007-000282	R-CHIP:1Mohm, 5%, 1/10W, DA,	00030000	R7, 16, 25
...3	2007-000290	R-CHIP:2.2Kohm, 5%, 1/10W, D	0003.000	R79
...3	2007-000290	R-CHIP:22Kohm, 5%, 1/10W, DA,	0003.000	R116
..3	2007-000300	R-CHIP:300ohm, 5%, 1/10W, DA,	0003.000	R94-96

LEVEL	PART NO	SPEC	Q°ØY	LOCATION
...3	20007-	R-CHIP:3Kohm, 5%, 1/10W, DA,	0003.000	R1-3
...3	000844	R-CHIP:470ohm, 5%, 1/10W, DA	0006.000	R4, 5, 1, 14, 22, 23
...3	20007-	R-CHIP:51Kohm, 5%, 1/10W, DA	0006.000	R38, 39, 47, 48, 56,
...3	000931	R-CHIP:680ohm, 5%, 1/10W, DA	0003.000	57
...3	20007-	R-CHIP:7.5Kohm, 5%, 1/10W, D	0003.000	R31, 40, 49
...3	001009	R-CHIP:82Kohm, 5%, 1/10W, DA	0003.000	R8, 17, 26
...3	20007-	R-CHIP:82Kohm, 5%, 1/10W, DA	0003.000	R62, 70, 76
...3	001118	R-CHIP:91Kohm, 5%, 1/10W, DA	0006.000	R60, 68, 74
...3	20007-	R-CHIP:91Kohm, 5%, 1/10W, DA	0003.000	R33, 35, 42, 44, 51,
...3	001141	C-CERAMIC, CHIP:100uF, 10%,	0006.000	53
...3	20007-	C-CERAMIC, CHIP:100uF, 10%,	0008.000	R35, 44, 53
...3	001205	C-CERAMIC, CHIP:100uF, 10%,	0004.000	C37, 39, 56, 58, 59,
...3	2007-001205	C-CERAMIC, CHIP:100uF, 10%,	0004.000	60
...3	2007-001243	C-CERAMIC, CHIP:10nF, 10%, 5	0001.000	C62, 64, 71-74, 76
...3	2007-001243	C-CERAMIC, CHIP:120pF, 10%, 5	0003.000	C82, 84, 85
...3	2203-000206	C-CERAMIC, CHIP:150pF, 10%, 5	0003.000	C19, 21, 28, 30
...3	2203-000206	C-CERAMIC, CHIP:1nF, 10%, 50	0003.000	c77
...3	2203-000206	C-CERAMIC, CHIP:1uF, +80-20	0003.000	C44, C48, C52
...3	2203-000206	C-CERAMIC, CHIP:200nF, +80-	0003.000	C22, 31, 40
...3	2203-000260	C-CERAMIC, CHIP:22nF, 10%, 5	0003.000	C23, C32, C41
...3	2203-000316	C-CERAMIC, CHIP:33nF, 10%, 5	0003.0000	C5, 9, 13
...3	2203-000361	C-CERAMIC, CHIP:560pF, 5%, 5	0003.000	C16, C25, C34
...3	2203-000444	C-CERAMIC, CHIP:820pF, 5%, 5	0003.000	C20, C29, C38
...3	2203-000476	C-CERAMIC, CHIP:100pF, 5%, 5	0003.000	C17, C26, C35
...3	2203-000563	C-FILM, MPEF:2.2uF, 10%, 250	0003.000	C45, C49, 53
...3	2203-000609	C-AL:47uF, 20%, 63V, GP, 10x1	0003.000	C43, C47, C51
...3	2203-000802	C-AL,SMD:33uF, 20%, 25V, -, 6	0003.000	C46, 50, 54
...3	2203-001058	C-AL:SMD:1uF, 20%, 50V, -, 3.	0004.000	C1, C2, C3
...3	2203-001229	C-AL, SMD:10uF, 20%, 16V, GP,	0002.000	C6, C10, C14
..2	2203-001453	CORE-FERRITE BEAD:ZZ, 3.5x	0001.000	C7, C11, C15
..2	2305-000574	RELAY-MINIATURE:5V, 98mW, 2	0005.000	C55, 57, 61, 63
..2	2401-001594	CONNECTOR-DIN:20P, 2R, MALE	0001.000	C83, C81
..2	2402-000147	CONNECTOR-DIN:50P, 2R, MALE	0001.000	B1
.1	2402-000170	PAA-PACK ASSY PBA:DCS824,	0001.000	RL1, 2, 3, 7, 8
..2	2402-000176	BOX(P)-MASTER:UK, COMPACT	0000.100	P2
..2	3301-000345	BOX(P)-UNIT PBA:UK, COMPACT	0001.000	P1
..2	3501-000210	CUSHION-PAD:SKP-24D, PUR, 3	0002.000	
..2	3703-000124	BAG-CONDUCTIVE:-, 0.1, 200X	0001.000	
..2	3703-000179	PAC-SILICAGEL:Si02, 72x59,	0001.000	
..2	GA99-	LABLE(P)-CE MARKLSF500, AR	0001.000	
..2	00953A	LABEL(P)-CE MARK:SF500, AR	0001.000	
	GA69-			
	11233A			
	GA69-			
	11234A			

6-4 6TRK PBA Component List

LEVEL	PART NO	SPEC	Q°TY	LOCATION
0	KP824IB6TRK	GB055:	0001.000	
.1	UK	EJECTOR-PCB MISC:DCS, NYL0	0002.000	
.1	GA61-	LABEL(P)-6TRK:COMPACT PLU	0002.000	
.1	10503A	LABEL(P)-6TRK(PACK):COMPA	0002.000	
.1	GA68-	PBA-P 6TRK PCB:COMPACT PL	0001.000	
..2	11454A	TRANS-AFLINFOREX, - 800mH	0006.000	T1-T6
..2	GA68-	PRA-P 6TRK AUTO:COMP PLUS	0001.000	PRA
...3	11464A	IC-ASIC:DCS, STL 7053A, QFP,	0002.000	U1, U2
...3	GA92-	PCB-6TRK:COMPACT PLUS, FR-	0001.000	PCB
...3	01585A	DIODE-SWITCHINGLHSK120,60	0006.000	D13-18
...3	EC26-20501A	DIODE-RECTIFIER:RLR4003, 2	0012.000	D1-12
...3	GA94-	DIODE-BRIDGE:DF04S, 400V, 1	0006.000	BD1-6
...3	01274A	DIODE-ZENER:RLZ3.6A, 3.6V,	0012.000	ZD19-30
...3	GA13-	DIODE-ZENER:RLZ5.1A, 5.1V,	0018.000	ZD1-18
...3	10052A	DIODE-TVS:1.5KE24A, 22.8-2	0006.000	TVS1-6
...3	GA41-	TR-SMALL SIGNAL:MMBT5550,	0006.000	Q7-12
...3	11014A	TR-POWERLKTD2058, NPN, 2W, T	0006.000	Q1-16
...3	0401-000128	PHOTO-COUPLER:TR,100-600%	0006.000	U11-16
...3	0402-000305	IC-COMS LOGIC:74HC125, BUF	0002.000	U3, U4
...3	0402-001047	IC-CODEC/ FILTER:TP3057WM,	0006.000	U5-U10
...3	0403-000308	R-MATAL OXIDE(S):30ohm, 5%	0006.000	R37-R42
...3	0403-001057	R-CHIP:0ohm, 5%, 1/10W, DA, T	0006.000	R101-106
...3	0406-001014	R-CHIP:100Kohm, 5%, 1/10W, D	0001.000	R90
...3	0501-000477	R-CHIP:100ohm, 5%, 1/10W, DA	0009.000	R64-67, 70-89, 94-
...3	0502-001040	R-CHIP:10Kohm, 5%, 1/10W, D	0006.000	97
...3	0604-000102	R-CHIP:10Kohm, 5%, 1/10W, DA	0006.000	R19, 21, 23, 25, 27,
...3	0801-000702	R-CHIP:150Kohm, 5%, 1/10W, D	0006.000	29
...3	1205-000394	R-CHIP:1Kohm, 5%, 1/10W, DA,	0001.000	R57-62
...3	2003-002047	R-CHIP:1Mohm, 5%, 1/10W, DA,	0001.000	R20, 22, 24, 26, 28,
...3	2007-000029	R-CHIP:2.2Kohm, 5%, 1/10W, D	0003.000	30
...3	2007-000282	R-CHIP:2.2Kohm, 5%, 1/10W, D	0003.000	R55
...3	2007-000290	R-CHIP:3Kohm, 5%, 1/10W, DA,	0006.000	R91
...3	2007-000300	R-CHIP:470ohm, 5%, 1/10W, DA	0002.000	R63, 68, 69
...3	2007-000300	R-CHIP:7.5Kohm, 5%, 1/10W, D	0006.000	R98-100
...3	2007-000395	C-CERAMIC, CHIP:100nF, 10%,	0007.000	R1-6
...3	2007-000468	C-CERAMIC, CHIP:100nF, 10%,	0006.000	R7-R18
...3	2007-000477	C-CERAMIC, CHIP:100nF, 10%,	0011.000	R31-36
...3	2007-000493	C-CERAMIC, CHIP:10nF, 10%, 5	0001.000	C46-48, 50, 51, 53,
...3	2007-000493	C-CERAMIC, CHIP:1uF, +80-20	0006.000	54

LEVEL	PART NO	SPEC	Q°ØTY	LOCATION
...3	2401-001594	C-AL:47uF, 20%, 63V, GP, 10x1	0006.000	C13-18
...3	2402-000147	C-AL, SMD:33uF, 20%, 25V, -, 6	0006.000	C19-24
...3	2402-000170	C-AL, SMD:1uF, 20%, 50V, -, 3.	0006.000	C37, 39, 43, 45, 49,
...3	2402-000176	C-AL, SMD:10uF, 20%, 16V,GP,	0002.000	52
...3	3301-000345	CORE-FERRITE BEAD:ZZ, 3.5x	0001.000	C58, C60
..2	1405-000138	VARISTOR:360V, 2500A, 17.5x	0018.000	B1
..2	3501-000210	RELAY-MINIATURE:5V, 98mA	0008.000	VA1-18
..2	3703-000124	CONNECTOR-DIN:20P, 2R MALE	0001.000	RL1-8
..2	3703-000179	CONNECTOR-DIN:50P, 2R MALE	0001.000	P2
.1	GA99-	PAA-PACK ASSY PBA:DCS824,	0001.000	P1
..2	00953A	BOX(P)-MASTER:UK, COMPACT	0000.100	
..2	GA69-	BOX(P)-UNIT PBA:UK, COMPAC	0001.000	
..2	11233A	CUSHION-PAD:SKP-24D, PUR,3	0002.000	
..2	GA69-	BAG-CONDUCTIVE:-, 0.1, 200X	0001.000	
..2	11234A	PAC-SILICAGEL:Si02, 72x59,	0001.000	
..2	GA69-	LABEL(P)-CE MARK:SF500, AR	0001.000	
..2	20590A	LABEL(P)-CE MARK:SF500, AR		
	GA69-			
	30569A			
	GA69-			
	90501A			
	JF68-10549A			
	JF68-10549B			

6-5 8DLI PBA Component List

LEVEL	PART NO.	SPEC.	Q°ØTY	LOCUTION
0	KP824IB8DLIE	GB055:	0001.000 EA	
.1	U	EJECTOR-PCB MISC : DCS, NYLO	0002.000 EA	
.1	GA61-	LABEL(P)-8DLI : COMPACT PLU	0002.000 EA	
.1	20503A	LABEL(P)-8DLI(PACK) : COMPA	0002.000 EA	
.1	GA68-	PBA-P 8DLI PCB : COMPACT PL	0001.000 EA	
..2	11455A	TRANS-PULSE : DGP 360, 144/ /	0008.000 EA	T1-T8
..2	GA68-	PRA-P 8DLI AUTO : COMP PLUS	0001.000 EA	PRA
...3	11465A	IC-ASIC : DECT, TP3404, PLCC	0002.000 EA	U2, U3
...3	GA92-	IC-ASIC : DECT, STI-9511, 60-	0001.000 EA	U1
...3	01555A	PCB-8DLI : COMPACT PLUS, FR-	0001.000 EA	PCB
...3	GA26-	DIODE-SWITCHING : HSK 120, 60	0016.000 EA	D1-D16
...3	10053A	DIODE-ZENER : RLZ3.6A, 3.6V	0016.000 EA	ZD1-ZD16
...3	GA94-	IC-CMOS LOGIC : 74HC08, AND	0001.000 EA	U6
...3	01247A	IC-CMOS LOGIC : 74HC125, BUF	0002.000 EA	U4, U5
...3	EN13-10502A	THERMISTOR : 4.85OHM, -, -, -	0008.000 EA	PS1-PS8
...3	EN13-10503A	R-CHIP : 100Kohm, 5%, 1/ 10W, D	0003.000 EA	R19, R11, R9
...3	GA41-	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0016.000 EA	R1-R8, R18, R21-
...3	11017A	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0013.000 EA	R27
...3	0401-000128	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0008.000 EA	R29-R39, R41, R42
...3	0403-000308	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0003.000 EA	R44-R51
...3	0801-000388	R-CHIP : 1Mohm, 5%, 1/ 10W, DA	0001.000 EA	R16, 17, 179
...3	0801-000702	R-CHIP : 1Mohm, 5%, 1/ 10W, DA	0002.000 EA	R20
...3	1404-000126	R-CHIP : 2.2Kohm, 5%, 1/ 10W, D	0002.000 EA	R40, 43
...3	2007-000282	R-CHIP : 4.7Khom, 5%, 1/ 10W, D	0002.000 EA	R14, R15
...3	2007-000290	R-CHIP : 470ohm, 5%, 1/ 10W, DA	0001.000 EA	R10, R12
...3	2007-000290	C-CERAMIC, CHIP : 100nF, 10%	0001.000 EA	R13
...3	2007-000290	C-CERAMIC, CHIP : 10nF, 10%, 5	0009.000 EA	C17-C24, C36, C4,
...3	2007-000300	C-CERAMIC, CHIP : 10nF, 10%, 5	0003.000 EA	C43
...3	2007-000477	C-CERAMIC,CHIP : 1uF, +80-20	0016.000 EA	BC2-BC6, BC11-
...3	2007-000477	C-CERAMIC, CHIP : 470uF, 5%, 5	0002.000 EA	BC14
...3	2007-000493	C-CERAMIC, CHIP : 100pF, 5%, 5	0001.000 EA	C37-C39
...3	2007-000872	C-CERAMIC, CHIP : 220pF, 5%, 5	0002.000 EA	C1-C16
..2	2007-000931	C-FILM, MPEF, 470nF, 10%, 250	0008.000 EA	C44, 45
..2	2203-000206	C-AL : 10uF, 20%, 50V, GP, 5x11	0001.000 EA	C34
..2	2203-000260	C-AL : 100uF, 20%, 63V, GP, 10x	0001.000 EA	C33, 35
..2	2203-000260	CORE-FERRITE BEAD : ZZ, 3.5x	0001.000 EA	C25-32
..2	2203-000476	CONNECTOR-DIN : 20P, 2R, MALE	0001.000 EA	C40
..2	2203-000953	CONNECTOR-DIN : 50P, 2R, MALE	0001.000 EA	C41
.1				

LEVEL	PART NO.	SPEC.	Q°ØY	LOCUTION
..2	GA69-	BOX(P)-MASTER : UK, COMPACT	0000.000 EA	
..2	11233A	BOX(P)-UNIT PBA : UK, COMPAC	0001.000 EA	
..2	GA69-	CUSHION-PAD : SKP-24D, PUR, 3	0002.000 EA	
..2	11234A	BAG-CONDUCTIVE : -, 0.1, 200X	0001.000 EA	
..2	GA69-	PAC-SILICAGEL : Si02, 72x59	0001.000 EA	
..2	20590A	LABEL(P)-CE MARK : SF500, AR	0001.000 EA	
..2	GA69-	LABEL(P)-CE MARK : SF500, AR	0001.000 EA	
	30569A			
	GA69-			
	90501A			
	JF68-10549A			
	JF68-10549B			

6-6 8SLI PBA Component List

LEVEL	PART NO.	SPEC.	Q°ØTY	LOCUTION
0	KP824IB8SLIU	GB055 :	0001.000 EA	
.1	K	EJECTOR-PCB MISC : DCS, NYLO	0002.000 EA	
.1	GA61-	LABEL(P)-8SLI : COMP ACT PLU	0002.000 EA	
.1	10503A	LABEL(P)-8SLI (PACK) : COMPA	0002.000 EA	
.1	GA68-	PBA-P 8SLI PCB : COMPACT PL	0001.000 EA	
..2	11456A	TRANS-AF : INFOREX, -, 800mH	0008.000 EA	T1-8
..2	GA68-	IC-HYB : TARGET, KP0072SA, SI	0002.000 EA	HYB3, 4
..2	11466A	PRA-P 8SLI AUTO : COMP PLUS	0001.000 EA	PRA
...3	GA92-	IC-ASIC : DCS, SBS-9401, QFP,	0001.000 EA	U1
...3	01556A	PCB-8SLI : COMPACT PLUS, FR-	0001.000 EA	PCB
...3	EC26-20501A	DIODE-SWITCHING : HSK120, 60	0016.000 EA	D25-D40
...3	GA13-	DIODE-ZENER : RLZ3.6A, 3.6V	0016.000 EA	ZD1-16
...3	10568A	TR-SMALL SIGNAL : KST5401TA	0008.000 EA	Q25-32
...3	GA94-	TR-SMALL SIGNAL : MMBT5550	0032.000 EA	Q17-24, Q33-56
...3	01248A	TR-SMALL SIGNAL : MMBT5550	0001.000 EA	Q66
...3	GA13-	TR-DARLINGTON : MPSA77, PNP	0008.000 EA	Q9-Q16
...3	10066A	TR-DARLINGTON : 74HC125, BUF	0008.000 EA	Q1-Q8
...3	GA41-	IC-CMOS LOGIC : 74HC 125, BUF	0002.000 EA	U2, U3
...3	11016A	IC-CODEC/ FILTER : TP3057WM	0008.000 EA	U4-11
...3	0401-000128	R-METAL OXIDE : 300ohm, 5%, 2	0001.000 EA	R211
...3	0403-000308	R-METAL OXIDE(S) : 220ohm, 5	0016.000 EA	R9-R16, R49-R56
...3	0501-000476	R-METAL OXIDE(S) : 270ohm, 5	0008.000 EA	R25-R32
...3	0501-000477	R-CHIP : 200ohm, 1%, 1/ 10W, DA	0016.000 EA	R1-R8, R65-R72
...3	0501-000477	R-CHIP : 100Kohm, 5%, 1/ 10W, D	0001.000 EA	R157
...3	0503-001005	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0019.000 EA	R159-177
...3	0503-001006	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0005.000 EA	R179-183
...3	0801-000702	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0016.000 EA	R41-48, R97-104
...3	1205-000394	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0016.000 EA	R129-136, R145-
...3	2003-000265	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0001.000 EA	152
...3	2003-001032	R-CHIP : 1Kohm, 5%, 1/ 10W, DA	0009.000 EA	R221
...3	2003-002037	R-CHIP : 1Mohm, 5%, 1/ 10W, DA	0001.000 EA	R105-112, 153
...3	2007-000011	R-CHIP : 2.2Kohm, 5%, 1/ 10W, D	0003.000 EA	R158
...3	2007-000282	R-CHIP : 20Kohm, 5%, 1/ 10W, DA	0016.000 EA	R155, 156, 178
...3	2007-000290	R-CHIP : 20Kohm, 5%, 1/ 10W, DA	0008.000 EA	R33-40, R81-88
...3	2007-000290	R-CHIP : 2Kohm, 5%, 1/ 10W, DA	0008.000 EA	R213-220
...3	2007-000300	R-CHIP : 30Kohm, 5%, 1/ 10W, DA	0016.000 EA	R222-229
...3	2007-000300	R-CHIP : 4.7Kohm, 5%, 1/ 10W, D	0016.000 EA	R113-128
...3	2007-000300	R-CHIP : 56Kohm, 5%, 1/ 10W, DA	0016.000 EA	R73-80, R89-96

LEVEL	PART NO.	SPEC.	Q°ØY	LOCUTION
...3	2203-000206	C-CERAMIC, CHIP : 100nF, 10%	0006.000 EA	C76, 77, 79, 80,
...3	2203-000206	C-CERAMIC, CHIP : 100nF, 10%	0008.000 EA	82,83
...3	2203-000206	C-CERAMIC, CHIP : 100nF, 10%	0008.000 EA	C85-88, 91, 92,
...3	2203-000260	C-CERAMIC, CHIP : 10nF, 10%	0002.000 EA	94,96
...3	2203-001453	C-CERAMIC, CHIP : 100pF, 5%, 5	0001.000 EA	C100-104
...3	2401-000029	C-AL : 10uF, 20%, 100V, GP, 8x1	0016.000 EA	C89, C99
...3	2402-000117	C-AL, SMD : 10uF, 20%, 35V, GP	0008.000 EA	C37
...3	2402-000130	C-AL, SMD : 2.2uF, 20%, 50V, GP	0008.000 EA	C25-40
...3	2402-000170	C-AL, SMD : 1uF, 20%, 50V, -, 3	0011.000 EA	C49-56
...3	2402-000170	C-AL, SMD : 1uF, 20%, 50V, -, 3	0005.000 EA	C57-64
...3	2402-000176	C-AL, SMD : 10uF, 20%, 16V, GP	0002.000 EA	C17-C24, C65, C68,
...3	3301-000345	CORE-FERRITE BEAD : ZZ, 3.5x	0001.000 EA	C71
..2	1405-000130	VARISTOR : 270V, 1200A, 9x4.6	0008.000 EA	C74, 75, 78, 81, 84
..2	2401-	C-AL : 68uF, 20%, 100V, GP, 10x	0001.000 EA	C93, 95
..2	0001661	RELAY-MINIATURE : 5V, 140mW	0008.000 EA	B1
..2	3501-000222	CONNECTOR-DIN : 10P, 2R,MALE	0001.000 EA	VA1-VA8
..2	3703-000105	CONNECTOR-DIN : 20P, 2R, MALE	0001.000 EA	C90
..2	3703-000124	CONNECTOR-DIN : 50P, 2R, MALE	0001.000 EA	RL1-RL8
..2	3703-000179	, : -, -, -, -, -, -,	0002.000 EA	P3
.1	887	PAA-PACK ASSY PBA : DCS824	0001.000 EA	P2
..2	190016SH	BOX(P)-MASTER : UK, COMPACT	0000.000 EA	P1
..2	GA99-	BOX(P)-UNIT PBA : UK, COMPAC	0001.000 EA	HYB1, 2
..2	000953A	CUSHION-PAD : SKP-24D, PUR, 3	0002.000 EA	
..2	GA69-	BAG-CONDUCTIVE : -, 0, 1, 200X	0001.000 EA	
..2	11233A	PAC-SILICAGEL : Si02, 72x59	0001.000 EA	
..2	GA69-	LABEL(P)-CE MARK : SF500, AR	0001.000 EA	
..2	11234A	LABEL(P)-CE MARK : SF500, AR	0001.000 EA	
	GA69-			
	20590A			
	GA69-			
	30569A			
	GA69-			
	90501A			
	JF68-10549A			
	JF68-10549B			

6-7 MISC1 PBA Component List

LEVEL	PART NO.	SPEC.	Q°TY	LOCUTION
0	KP824IBMISC	GB055	0001.000 EA	
.1	1EU	EJECTOR-PCB MISC : DCS, NYLO	0002.000 EA	
.1	GA61-	LABEL(P)-MISC1 : COMPACT PL	0002.000 EA	
.1	10503A	LABEL(P)-MISC1(PA) : COMPAC	0002.000 EA	
.1	GA68-	PBA-P MISC PCB : COMPACT PL	0001.000 EA	
..2	11457A	PRA-P MISC AUTO : COMP PLUS	0001.000 EA	PRA
...3	GA68-	IC-ASIC : DCS, STL7053A, QFP	0001.000 EA	U17
...3	11467A	IC-ASIC : DCS, STL7065C, QFP	0001.000 EA	U11
...3	GA92-	PCB-MISC : COMPACT PLUS, FR-	0001.000 EA	PCB
...3	01559A	DIODE-SWITCHING : HSK120, 60	0005.000 EA	D2-6
...3	GA94-	DIODE-RECTIFIER : RLR4003, 2	0001.000 EA	D7
...3	01250A	TR-SMALL SIGNAL : MMBT5550	0003.000 EA	Q2, 3, 4
...3	GA13-	PHOTO-COUPLER : TR, 100-600%	0001.000 EA	U31
...3	10052A	IC-CMOS LOGIC : 74HC08, AND	0002.000 EA	U19, 29
...3	GA13-	IC-CMOS LOGIC : 74HC04, INVE	0001.000 EA	U9
...3	10064A	IC-CMOS LOGIC : 74HC32, OR G	0001.000 EA	U26
...3	GA41-	IC-CMOS LOGIC : 74HC138, 3-T	0001.000 EA	U15
...3	11013A	IC-CMOS LOGIC : 74HC245, TRA	0001.000 EA	U27
...3	0401-000128	IC-CMOS LOGIC : 74HC245, TRA	0001.000 EA	U18
...3	0402-000305	IC-CMOS LOGIC : 74HC125, BUF	0001.000 EA	U20
...3	0501-000477	IC-CMOS LOGIC : 74HC541, BUF	0001.000 EA	U28
...3	0604-000102	IC-DUART : 68681, 8BIT, PLCC	0001.000 EA	U5
...3	0801-000388	IC-DRIVER/ RECEIVER : 145407	0002.000 EA	U12, 23
...3	0801-000397	IC-OP AMP L 34072, SOP, 8P, 15	0001.000 EA	U22
...3	0801-000411	IC-CODEC/ FILTER : TP3057WM	0001.000 EA	U21
...3	0801-000642	R-CHIP : 0ohm, 5%, 1/ 10W, D	0003.000 EA	R2, 22, 23
...3	0801-000696	R-CHIP : 100Kohm, 5%, 1/ 10W, D	0005.000 EA	R7, 9, 75, 86, 88
...3	0801-000696	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0013.000 EA	R1, 3, R10-12, R14-
...3	0801-000702	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0017.000 EA	21
...3	0801-000716	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0018.000 EA	R31-43, 45, 47, 53,
...3	0904-000177	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0006.000 EA	109
...3	1006-001031	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0003.000 EA	R54, R61-74, 78,
...3	1201-000197	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0009.000 EA	79, 84
...3	1205-000394	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0007.000 EA	R87, R94-96, 98,
...3	2007-000029	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0006.000 EA	104
...3	2007-000282	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0003.000 EA	R110-112
...3	2007-000290	R-CHIP : 1Kohm, 5%, 1/ 10W, DA	0003.000 EA	R4-6, 13, R25-28,
...3	2007-000290	R-CHIP : 1Mohm, 5%, 1/ 10W, DA	0002.000 EA	R30

LEVEL	PART NO.	SPEC.	Q°ØTY	LOCUTION
...3	2007-000615	R-CHIP : 24Kohm, 5%, 1/10W, DA	0001.000 EA	R56
...3	2007-000653	R-CHIP : 27Kohm, 5%, 1/10W, DA	0001.000 EA	R102
...3	2007-000686	R-CHIP : 3.3Kohm, 5%, 1/10W, D	0003.000 EA	R55, 82, 85
...3	2007-000798	R-CHIP : 360ohm, 5%, 1/10W, DA	0002.000 EA	R103, 105
...3	2007-000830	R-CHIP : 39Kohm, 5%, 1/10W, DA	0002.000 EA	R90, R100
...3	2007-000938	R-CHIP : 47Kohm, 1%, 1/10W, DA	0001.000 EA	R99
...3	2007-001009	R-CHIP : 54Kohm, 5%, 1/10W, DA	0001.000 EA	R57
...3	2007-001097	R-CHIP : 62Kohm, 5%, 1/10W, DA	0001.000 EA	R89
...3	2203-000206	C-CERAMIC, CHIP : 100nF, 10%	0059.000 EA	BC1-18, BC20-60
...3	2203-000206	C-CERAMIC, CHIP : 100nF, 10%	0005.000 EA	C6, 20, 23, 28, 30
...3	2203-000206	C-CERAMIC, CHIP : 100nF, 10%	0003.000 EA	BC61-63
...3	2203-000260	C-CERAMIC, CHIP : 10nF, 10%, 5	0002.000 EA	C3, C31
...3	2203-000296	C-CERAMIC, CHIP : 10pF, 5%, 50	0001.000 EA	C5
...3	2203-000390	C-CERAMIC, CHIP : 15pF, 5%, 50	0001.000 EA	C4
...3	2203-001002	C-CERAMIC, CHIP : 47uF, 5%, 50	0001.000 EA	
...3	2203-001229	C-CERAMIC, CHIP : 820pF, 5%, 5	0001.000 EA	
...3	2203-001453	C-CERAMIC, CHIP : 100pF, 5%, 5	0014.000 EA	
...3	2402-000170	C-AL, SMD : 1uF, 20%, 50V, -, 3	0006.000 EA	
...3	2402-000176	C-AL, SMD : 10uF, 20%, 16V, GP	0002.000 EA	
..2	0402-000165	DIODE-RECTIFIER : 1N5819, 40	0001.000 EA	
..2	1405-000130	VARISTOR : 270V, 1200A, 9x4.6	0003.000 EA	
..2	2401-000649	C-AL : 2.2uF, 20%, 50V, BP, 6x1	0002.000 EA	
..2	2801-001516	CRYSTAL-UNIT : 3.6864MHz, 50	0001.000 EA	
..2	2804-000146	OSCILLATOR-CLOCK : 16.384MH	0001.000 EA	
..2	0901-000183	FILTER-EMI ON BOARD : 50V, 1	0001.000 EA	
..2	3301-000345	CORE-FERRITE BEAD : ZZ, 3.5x	0004.000 EA	
..2	3501-000210	RELAY-MINIATURE : 5V, 98mW, 2	0003.000 EA	
..2	3701-000297	CONNECTOR-DSUB : 9P, 1R, FEMA	0002.000 EA	
..2	3703-000192	CONNECTOR-DIN : 64P, 2R, MALE	0001.000 EA	
..2	32711-	CONNECTOR-HEADER : 1WALL, 14	0002.000 EA	
..2	003455	SURGE ABSORBER : 300V, 15%, 5	0001.000 EA	
..2	4715-000127	TRF-AF, 600//6000HM : 600//6	0002.000 EA	
.1	923003013A	PAA-PACK ASSY PBA : DCS824	0001.000 EA	
..2	A	BOX(P)-MASTER : UK, COMPACT	0001.000 EA	
..2	GA99-	BOX(P)-UNIT PBA : UK, COMPAC	0001.000 EA	
..2	00953A	CUSHION-PAD : SKP-24D, PUR, 3	0002.000 EA	
..2	GA69-	BAG-CONDUCTIVE : -, 0.1, 200X	0001.000 EA	
..2	11233A	PAC-SILICAGEL : Si02, 72x59	0001.000 EA	
..2	GA69-	LABEL(P)-CE MARK : SF500, AR	0001.000 EA	
..2	11234A	LABEL(P)-CE MARK : SF500, AR	0001.000 EA	
.1	GA69-	IC-EPROM : 27C4001, 512KX8BI	0001.000 EA	
.1	20590A	IC-EPROM : 27C512, 64KX8BIT	0001.000 EA	
	GA69-			
	30569A			

6-8 PLL PBA Component List

LEVEL	PART NO.	SPEC.	Q°ØTY	LOCUTION
0	KP824IBPLLEU	GB055 :	0001.000 EA	
.1	GA92-	PBA-P LL PCB : COMPACT PLUS	0001.000 EA	
..2	01558A	COIL-RF : INFOREX, 35UH, -, 40	0003.000 EA	L1-3
..2	EC27-30514A	PRA-PLL AUTO : COMP PLUS P	0001.000 EA	PRA
...3	GA94-	PCB-PLL : COMPACT PLUS, FR-4	0001.000 EA	PCB
...3	01249A	DIODE-SWITCHING : HSK120, 60	0001.000 EA	D1
...3	GA41-	DIODE-RECTIFIER : 1N5819,40	0001.000 EA	D2
...3	11020A	IC-CMOS LOGIC : 74HC00, NAND	0001.000 EA	U14
...3	0401-000128	IC-CMOS LOGIC : 74HC86, GATE	0001.000 EA	U6
...3	0402-000165	IC-CMOS LOGIC : 74HC74, D FL	0002.000 EA	U5,U7
...3	0801-000378	IC-CMOS LOGIC : 74HC393A, BI	0002.000 EA	U2, U3
...3	0801-000393	IC-CMOS LOGIC : 74HC163, BIN	0003.000 EA	U11, U12, U13
...3	0801-000455	IC-CMOS LOGIC : 74HC148, PRI	0001.000 EA	U1
...3	0801-000630	IC-CMOS LOGIC : 74HC4051, MU	0001.000 EA	U4
...3	0801-000646	IC-CMOS LOGIC : 74HC4053, MU	0001.000 EA	U16
...3	0801-000671	IC-OP AMP L 2140, SOP, 8P, 150	0002.000 EA	U9, U10
...3	0801-000823	IC-DC/ DC CONVERTER : 1109, S	0001.000 EA	U8
...3	0801-000824	IC-DC/ DC CONVERTER : 34063	0001.000 EA	U15
...3	1201-000309	R-CHIP : 0ohm, 5%, 1/ 10W, DA	0003.000 EA	R27, 11, 12
...3	1203-000103	R-CHIP : 1.2Kohm, 1%, 1/ 10W, D	0001.000 EA	R2
...3	1203-000404	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0002.000 EA	R29, 30
...3	2007-000029	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0008.000 EA	R10, 13, 17-21, 28
...3	2007-000218	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0010.000 EA	R14, 16, 22-26, 31-
...3	2007-000290	R-CHIP : 1Kohm, 1%, 1/ 10W, DA	0001.000 EA	33
...3	2007-000290	R-CHIP : 1Mohm, 5%, 1/ 10W, DA	0003.000 EA	R1
...3	2007-000300	R-CHIP : 1ohm, 5%, 1/ 10W, DA, T	0003.000 EA	R4-6
...3	2007-000465	R-CHIP : 30Kohm, 1%, 1/ 10W, D	0003.000 EA	R35-37
...3	2007-000477	R-CHIP : 8.2Kohm, 1%, 1/ 10W, DA	0001.000 EA	R7, 8, 15
...3	2007-000483	R-CHIP : 910ohm, 5%, 1/ 10W, DA	0001.000 EA	R38
...3	2007-000735	C-CERAMIC, CHIP : 100nF, 10%	0006.000 EA	R39
...3	2007-001177	C-CERAMIC, CHIP : 100nF, 10%	0001.000 EA	C5, 10, 12, 14, BC9,
...3	2007-001239	C-CERAMIC, CHIP : 1uF, +80-20	0001.000 EA	11
...3	2003-000206	C-CERAMIC, CHIP : 100pF, 5%, 5	0002.000 EA	BC18
...3	2203-000206	C-CERAMIC, CHIP : 10nF, 10%, 5	0017.000 EA	C4
...3	2203-000478	C-CERAMIC, CHIP : 10nF, 10%, 5	0002.000 EA	C6, 15
...3	2203-001453	C-CERAMIC, CHIP : 220pF, 5%, 5	0001.000 EA	BC1-8, 10, 12-17,
...3	2203-001458	C-FILM, PEF : 100nF, 5%, 50V, 1	0001.000 EA	19, 20
...3	2203-001458	C-AL, SMD : 22uF, 20%, 35V, -, 6	0001.000 EA	C1, 7

LEVEL	PART NO.	SPEC.	Q°ØY	LOCUTION
...3	3301-000345	CORE-FERRITE BEAD : ZZ, 3.5x	0002.000 EA	B3, B5
..2	2806-000138	OSCILLATOR-VCXO : 8.192MHz	0001.000 EA	Y1
..2	3711-003455	CONNECTOR-HEADER : 1WALL, 14	0002.000 EA	P1, P2
.1	GA99-	PAA-EXP BASE, EXP STD : DCS	0001.000 EA	
..2	00895A	LABEL(P)-CAUTION : SKP-816H	0001.000 EA	
..2	GA68-	BOX(P)-UNIT : -, STD, SW5, 595	0001.000 EA	
..2	10763A	BOX(P)-MASTER : -, STD, SW5, 7	0000.000 EA	
..2	GA69-	CUSHION-PAD : SKP-24D, PUR, 3	0002.000 EA	
..2	11099A	BAG-CONDUCTIVE : -, 0.1, 200X	0001.000 EA	
..2	GA69-	PAC-SILICAGEL : Si02, 72x59	0001.000 EA	
	11107A			
	GA69-			
	20590A			
	GA69-			
	30569A			
	GA69-			
	90501A			

6-9 4S0T0 PBA Component List

LEVEL	PART NO.	SPEC.	Q°ØTY	LOCUTION
0	KP824IB4BRIE	GB055 :	0001.000 EA	
.1	U	EJECTOR-PCB MISC : DCS, NYLO	0002.000 EA	
.1	GA61-	LABEL(P)-4BRI : COMPACT PLU	0002.000 EA	
.1	10503A	LABEL(P)-4BRI(PACK) : COMPA	0002.000 EA	
.1	GA68-	PBA-4SO : COMPACT EURO, SECU	0001.000 EA	
..2	11460A	PRA-4SO : COMPACT EURO, SECU	0001.000 EA	AUT1
...3	GA68-	IC-ASIC : DCS, STL 7066, QFP, 1	0001.000 EA	U23
...3	11469A	PCB-4SO : COMPACT EURO, FR-4	0001.000 EA	PCB
...3	GA92-	DIODE-SWITCHING : HSK120, 60	0004.000 EA	D25-28
...3	01606A	DIODE-ZENER : RLZ3.6A, 3.6V	0001.000 EA	D22
...3	GA94-	DIODE-ZENER : RLZ3.6A, 3.6V	0007.000 EA	D1, 4, 7,10, 13, 16,
...3	01293A	DIODE-ARRAY : BAV70LT1, 70V	0004.000 EA	19
...3	GA13-	DIODE-ARRAY : BAV70LT1, 70V	0004.000 EA	D2, 5, 8,11
...3	10065A	DIODE-ARRAY : BAW56LT1, 70V	0004.000 EA	D14, 17, 20, 23
...3	GA41-	DIODE-ARRAY : BAW56LT1, 70V	0004.000 EA	D3, 6, 9, 12
...3	11009A	TR-SMALL SIGNAL : MMBT 5550	0004.000 EA	D15, 18, 21, 24
...3	0401-000128	IC-CMOS LOGIC : 74HC08, AND	0002.000 EA	Q1-Q4
...3	0403-000308	IC-CMOS LOGIC : 74HC04, INVE	0003.000 EA	U2, 4
...3	0403-000308	IC-CMOS LOGIC : 74HC32, OR G	0003.000 EA	U5, 19,30
...3	0407-000112	IC-CMOS LOGIC : 74HC74, D FL	0004.000 EA	U6, 9, 18
...3	0407-000112	IC-CMOS LOGIC : 74HC139, 2-T	0001.000 EA	U1, 7, 14, 22
...3	0407-000113	IC-CMOS LOGIC : 74HC 163, BIN	0002.000 EA	U13
...3	0407-000113	IC-CMOS LOGIC : 74HC 174, D F	0002.000 EA	U3,8
...3	0501-000477	IC-CMOS LOGIC : 74HC 373, D L	0001.000 EA	U15, 20
...3	0801-000388	IC-CMOS LOGIC : 74HC 245, TRA	0001.000 EA	U26
...3	0801-000397	IC-CMOS LOGIC : 74HC 125, BUF	0001.000 EA	U31
...3	0801-000411	IC-CMOS LOGIC : 74HC 541, BUF	0001.000 EA	U16
...3	0801-000455	IC-CMOS LOGIC : 74HC 244, BUF	0001.000 EA	U32
...3	0801-000637	IC-TTL : 74LSO 8, AND GATE, SO	0001.000 EA	U17
...3	0801-000646	IC-MICROPROCESSOR : 68EC000	0001.000 EA	U29
...3	0801-000649	IC-SRAM : 681000, 128KX8BIT	0002.000 EA	U21
...3	0801-000690	IC-VOLTAGE COMP. : 1232, SOP	0001.000 EA	U24, 33
...3	0801-000696	IC-HDLC CONTRO : PEB2075-N	0001.000 EA	U28
...3	0801-000702	IC-EPIC-S : PEB2054-N, PLCC	0001.000 EA	U11
...3	0801-000716	IC-TRANSCEIVER : PEB2084H, F	0001.000 EA	U12
...3	0801-000945	THERMISTOR : 4.85ohm, -, -, -,	0004.000 EA	U10
...3	0803-000842	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0027.000 EA	PS1-4
...3	0902-000314	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0024.000 EA	R2, 10-12, 18-28,

LEVEL	PART NO.	SPEC.	Q°ØY	LOCUTION
...3	1106-000141	R-CHIP : 100ohm, 5%, 1/10W, DA	0008.000 EA	47-58
...3	1202-000137	R-CHIP : 100ohm, 5%, 1/10W, DA	0011.000 EA	R61-84, R110-113
...3	1205-000157	R-CHIP : 100ohm, 5%, 1/20W, DA	0001.000 EA	R86-89, 118, 114-
...3	1205-000383	R-CHIP : 100ohm, 5%, 1/20W, DA	0005.000 EA	117
...3	1205-000590	R-CHIP : 10Kohm, 5%, 1/10W, DA	0010.000 EA	R119, 120, 139-
...3	1404-000126	R-CHIP : 10Kohm, 5%, 1/10W, DA	0006.000 EA	145, 147
...3	2007-000290	R-CHIP : 10Kohm, 5%, 1/10W, DA	0005.000 EA	R135
...3	2007-000290	R-CHIP : 10Kohm, 5%, 1/10W, DA	0002.000 EA	R136-138, R104,
...3	2007-000290	R-CHIP : 1Kohm, 5%, 1/10W, DA	0015.000 EA	R146
...3	2007-000290	R-CHIP : 27ohm, 5%, 1/10W, DA	0006.000 EA	R5-9, R14, 15, 31,
...3	2007-000290	R-CHIP : 27ohm, 5%, 1/10W, DA	0002.000 EA	32, 35
...3	2007-000290	R-CHIP : 2Kohm, 5%, 1/10W, DA	0002.000 EA	R36, 39, 40, 43, 44,
...3	2007-000300	R-CHIP : 3.3Kohm, 5%, 1/10W, D	0008.000 EA	59
...3	2007-000300	C-CERAMIC, MLC-RADIAL : 100n	0008.000 EA	R60, 102, 103, 108,
...3	2007-000300	C-CERAMIC, CHIP : 100nF, 10%	0009.000 EA	109
...3	2007-000300	C-CERAMIC, CHIP : 100nF, 10%	0007.000 EA	R13, 85
...3	2007-000468	C-CERAMIC, CHIP : 100nF, 10%	0014.000 EA	R1, 3, 4, 121-132
...3	2007-000658	C-CERAMIC, CHIP : 100nF, 10%	0013.000 EA	R33, 34, 37, 38, 41,
...3	2007-000658	C-CERAMIC, CHIP : 100nF, 10%	0001.000 EA	42
...3	2007-000671	C-CERAMIC, CHIP : 10nF, 10%, 5	0010.000 EA	R45, 46
...3	2007-000686	C-CERAMIC,CHIP : 47pF, 10%, 5	0005.000 EA	R16, 17
...3	2202-000325	C-CERAMIC,CHIP : 100pF. 5%, 5	0012.000 EA	R29, 30, 90-92,
...3	2203-000206	C-AL : 10uF, 20%, 50V, GP, 5x11	0001.000 EA	105-107
...3	2203-000206	C-AL : 10uF, 20%, 100V, GP, 8x1	0002.000 EA	C77, C84
...3	2203-000206	C-AL : 47uF,20%, 63V, GP, 10x1	0001.000 EA	C47-50, 52-54, 60,
...3	2203-000206	C-TA, CHIP: 10uF, 20%, 16V, -	0004.000 EA	88
...3	2203-000206	FILTER-EMI ON BOARD : 50V, 1	0003.000 EA	C70-76
...3	2203-000260	CORE-FERRITE BEAD : ZZ, 3.5x	0002.000 EA	C12-20, 29, C31-34
...3	2203-000992	SURGE ABSORBER : 300V, 15%, 5	0016.000 EA	C36-40, C61-68
..2	2203-001453	IC-NEGA. ADJUST REF. : 337, T	0002.000 EA	C35
..2	2401-000028	R-METAL OXIDE : 3.9Kohm, 2%	0002.000 EA	C2, 11, 22-28, 30
..2	2401-000029	TRANS-SMD, PULSE : 30mH, 0.67	0004.000 EA	C3, C8-10, 21
..2	2401-001594	OSCILLATOR-CLOCK : 7.68MHz	0001.000 EA	C7, 41-46, 51, 55,
..2	2404-000123	OSCILLATOR-CLOCK : 16MHz, 50	0001.000 EA	56-59
..2	2901-000183	CORE-FERRITE BEAD : AA, 3.5x	0016.000 EA	C87
..2	3301-000345	RELAY-MAINIATURE : 5V, 140mW	0004.000 EA	C69, 85
..2	4715-000127	CONNECTOR-DIN : 20P, 2R, MALE	0001.000 EA	C86
..2	1203-000107	CONNECTOR-DIN : 50P, 2R, MALE	0001.000 EA	C1, 4, 5, 6
..2	2003-000254	CONNECTOR-DIN : 10P, 2R, FEMA	0001.000 EA	B1, 2, 3
..2	2601-000119	SOCKET-IC : 32P, DIP, SN, 2.54	0002.000 EA	B4, 5
..2	2804-000315	CON-SOCKET, 26P, 2R : STRAIGH	0001.000 EA	AR1-16
.1	2804-000361	PAA-PACK ASSY PBA : DCS824	0001.000 EA	U27, 35
..2	3301-000292	BOX(P)-MASTER : UK, COMPACT	0000.000 EA	RW1-2
..2	3501-000222	BOX(P)-UNIT PBA : UK, COMPAC	0001.000 EA	T1-4

LEVEL	PART NO.	SPEC.	Q°TY	LOCUTION
..2	3703-000124	CUSHION-PAD : SKP-24D, PUR, 3	0002.000 EA	Y1
..2	3703-000179	BAG-CONDUCTIVE : -, 0.1, 200X	0001.000 EA	Y2
..2	3703-000271	PAC-SILICAGEL : Si02, 72x59	0001.000 EA	B6-21
..2	3704-000255	LABEL(P)-CE MARK : SF500, AR	0001.000 EA	K1-4
..2	935	LABEL(P)-CE MARK : SF500, AR	0001.000 EA	P2
.1	145626DA	IC-EPROM : 27C4001, 512KX8BI	0002.000 EA	P4
	GA99-00953A			P3
	GA69-11233A			U25, 34
	GA69-11234A			P1
	GA69-20590A			
	GA69-30569A			
	GA69-90501A			
	JF68-10549A			U8, 9
	JF68-10549B			
	1102-000163			

6-10 MODEM PBA Component List

LEVEL	PART NO.	SPEC.	Q°ØY	LOCUTION
0	KP824IBMODE	GA055 :	0001.000 EA	
.1	U	EJECTOR-PCB MISC : DCS, NYLO	0002.000 EA	
.1	GA61-	PBA-P MODEM : PLUS MODEM, SE	0001.000 EA	
..2	10503A	PRA-MODEM AUTO : COMP PLUS	0001.000 EA	PRA
...3	GA92-	PCB-MODEM : COMPACT PLUS, FR	0001.000 EA	PCB
...3	01626A	COIL-RF : SF2600, 4MH, 7.50HM	0001.000 EA	L1
...3	GA94-	IC-CMOS LOGIC : 74HC04, INVE	0001.000 EA	U5
...3	01313A	IC-CMOS LOGIC : 74HC32, OR G	0001.000 EA	U6
...3	GA41-	IC-CMOS LOGIC : 74HC245, TRA	0001.000 EA	U4
...3	11019A	IC-CMOS LOGIC : 74HC125, BUF	0001.000 EA	U11
...3	JF27-30053A	IC-EPROM : 27C010, 128Kx8BIT	0001.000 EA	U2
...3	0801-000397	IC-SRAM : 62256, 32KX8BIT, SO	0001.000 EA	U3
...3	0801-000411	IC-OP AMP : 34072, SOP, 8P, 15	0001.000 EA	U14
...3	0801-000696	IC-CODEC/ FILTER : TP3057WM	0001.000 EA	U10
...3	0801-000702	IC-MODEM : RCV144ACF, PLCC, 6	0001.000 EA	U1
...3	1102-001032	R-CHIP : 0ohm, 5%, 1/ 10W, DA, T	0001.000 EA	R19
...3	1106-001026	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0004.000 EA	R9, 11-17, 19-21,
...3	1201-000197	R-CHIP : 100ohm, 5%, 1/ 10W, DA	0004.000 EA	25-27
...3	1205-000394	R-CHIP : 10Kohm, 5%, 1/ 10W, DA	0003.000 EA	R47-49, 58
...3	1205-001131	R-CHIP : 110Kohm, 1%, 1/ 10W, D	0001.000 EA	R10, 18, 28
...3	2007-000029	R-CHIP : 110Kohm, 1%, 1/ 10W, D	0001.000 EA	R50
...3	2007-000290	R-CHIP : 2Kohm, 5%, 1/ 10W, DA	0003.000 EA	R50
...3	2007-000290	R-CHIP : 300ohm, 5%, 1/ 10W, DA	0008.000 EA	R22, 23, 24
...3	2007-000300	R-CHIP : 43Kohm, 1%, 1,10W, DA	0001.000 EA	R1-8
...3	2007-000314	R-CHIP : 68.1Kohm, 1%, 1/ 10W	0001.000 EA	R55
...3	2007-000314	R-CHIP : 137Kohm, 1%, 1/ 10W, D	0001.000 EA	R57
...3	2007-000671	C-CERAMIC, CHIP : 100nF, 10%,	0007.000 EA	R56
...3	2007-000728	DA	0004.000 EA	C3, 4, 8, 9, 19, 20,
...3	2007-000909	C-CERAMIC, CHIP : 100pF, 5%, 5	0001.000 EA	31
...3	2007-001107	C-CERAMIC, CHIP : 10nF, 10%, 5	0001.000 EA	C34-37
...3	2007-007159	C-CERAMIC, CHIP : 150pF, 5%, 5	0001.000 EA	C5, 15, 16, 32, 33,
...3	2203-000206	C-CERAMIC, CHIP : 33pF, 5%, 50	0001.000 EA	50-55
...3	2203-000239	C-CERAMIC, CHIP : 470pF, 10%	0002.000 EA	C29
...3	2203-000260	C-CERAMIC, CHIP : 10pF, 0.5pF	0002.000 EA	C11
...3	2203-000361	C-AL, SMD : 1uF, 20%, 50V, -, 3	0006.000 EA	C30
...3	2203-000818	C-AL, SMD : 10uF, 20%, 16V, GP	0001.000 EA	C10, C12
..2	2203-000943	INDUCTOR-SMD : 4.7uH, 10%, 1	0001.000 EA	C17, 18
..2	2203-001462	SOCKET-IC : 32P, DIP, SN, 2.54	0002.000 EA	C1, 2, 6, 7, 13, 14

LEVEL	PART NO.	SPEC.	Q°ØTY	LOCUTION
..2	GA68-	LABEL(P)-CAUTION : SKP-816H	0001.000 EA	
..2	10763A	BOX(P)-UNIT : -, STD, SW5, 595	0001.000 EA	
..2	GA69-	BOX(P)-MASTER : -, STD, SW5, 7	0000.000 EA	
..2	11099A	CUSHION-PAD : SKP-24D, PUR, 3	0002.000 EA	
..2	GA69-	BAG-CONDUCTIVE : -, 0.1, 200X	0001.000 EA	
..2	11107A	PAC-SILICAGEL : Si02, 72x59	0001.000 EA	
	GA69-			
	20590A			
	GA69-			
	30569A			
	GA69-			
	90501A			

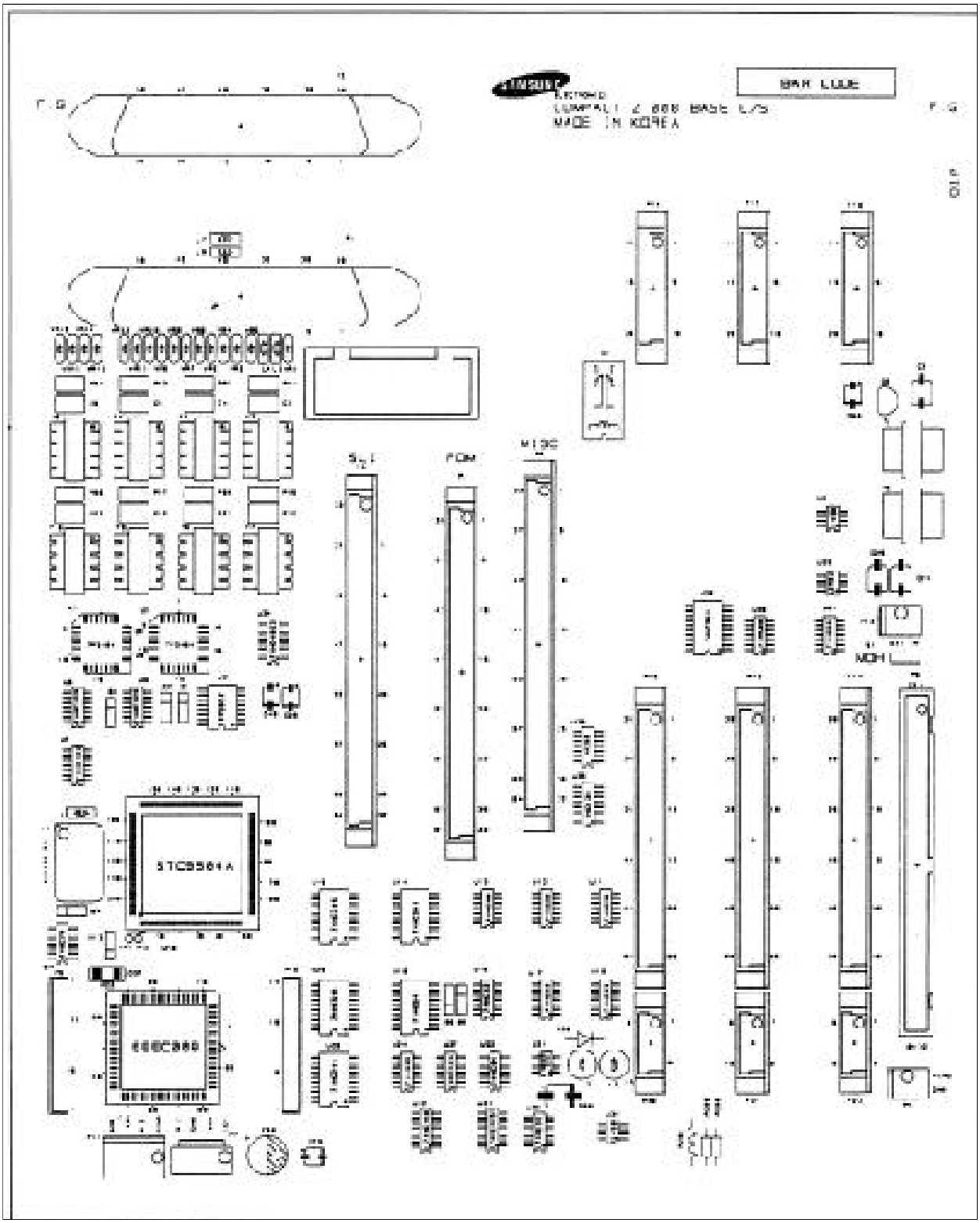
Chapter 5

PBA Layout

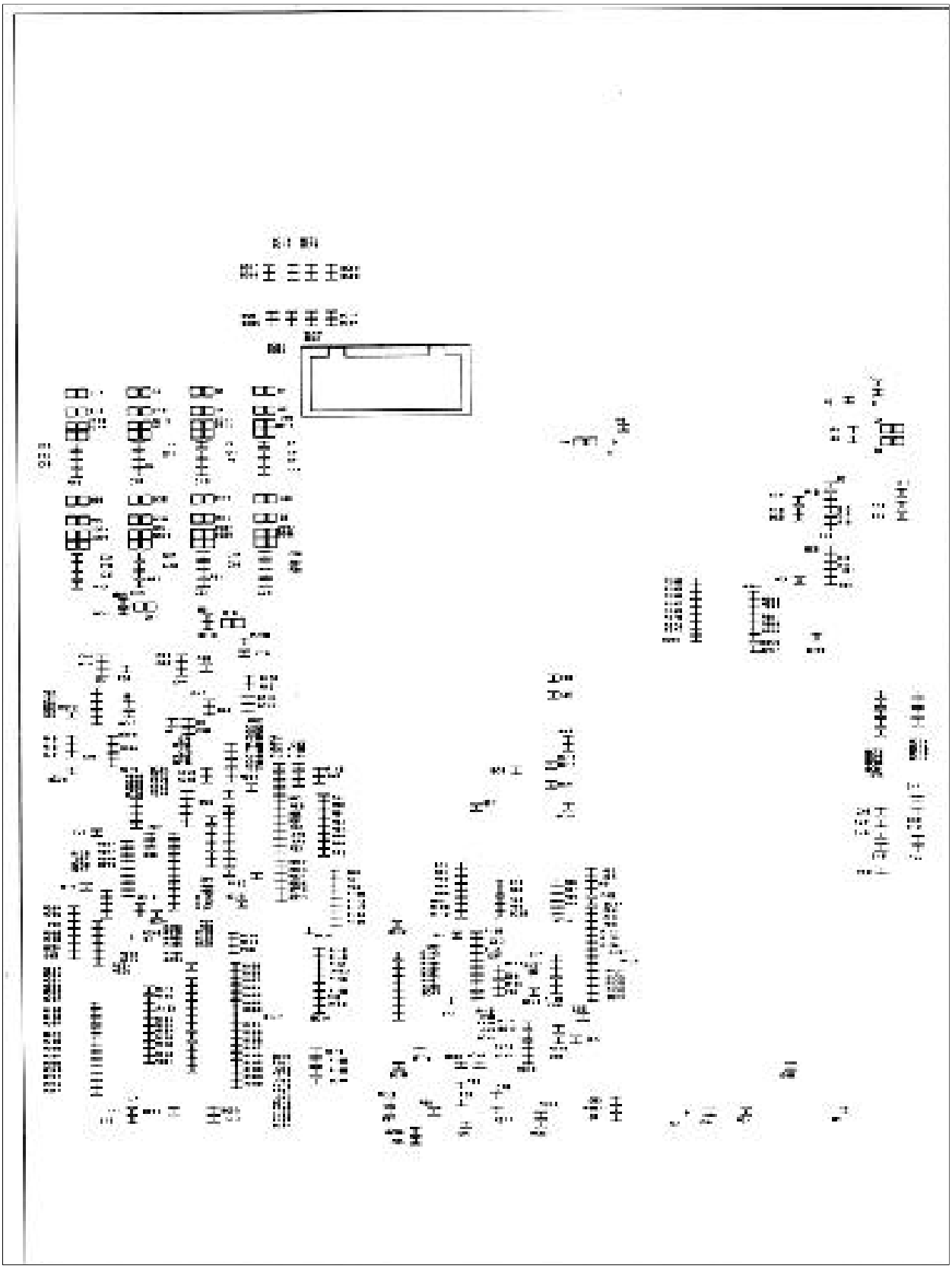
5-1 008 Base Board.....5-3
5-2 MEM 5-5
5-3 3TRK Card.....5-6
5-4 6TRK Card.....5-7
5-5 8SLI Card.....5-8
5-6 2SLI Card.....5-9
5-7 8DLI Card.....5-11
5-8 MISC 1/2 Card.....5-12
5-9 4S0T0 Card 5-13
5-10 E1 Card.....5-14
5-11 PRI Card.....5-15
5-12 AA Card.....5-16
5-13 MODEM Card.....5-17
5-14 PLL.....5-18

5-1 008 BASE BOARD

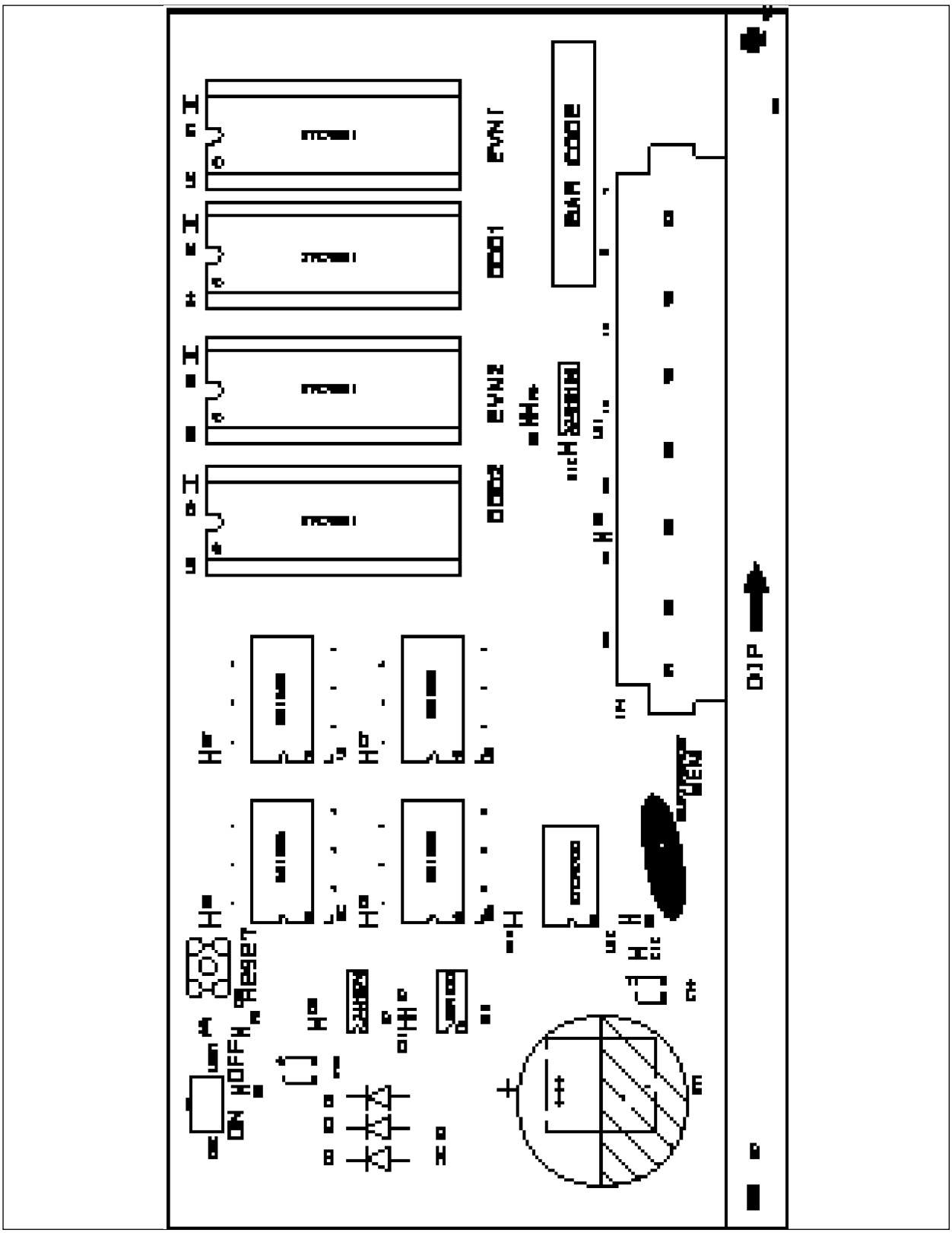
Component layout



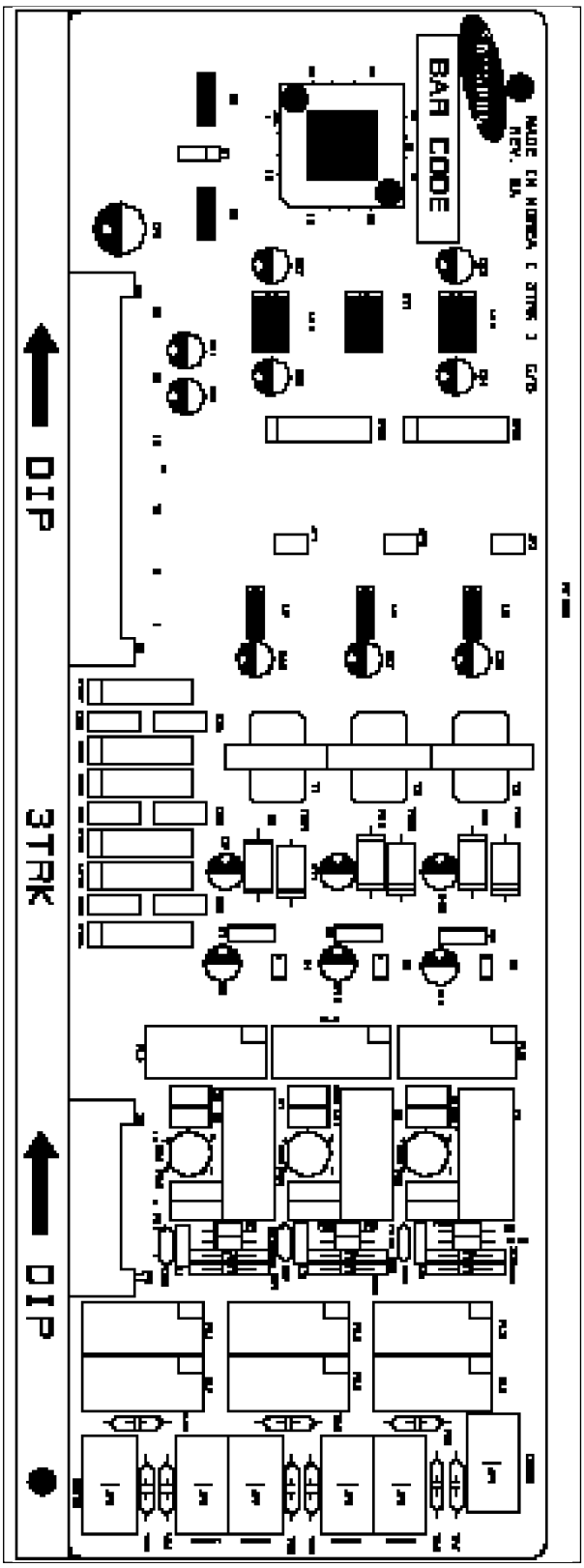
Solder Side

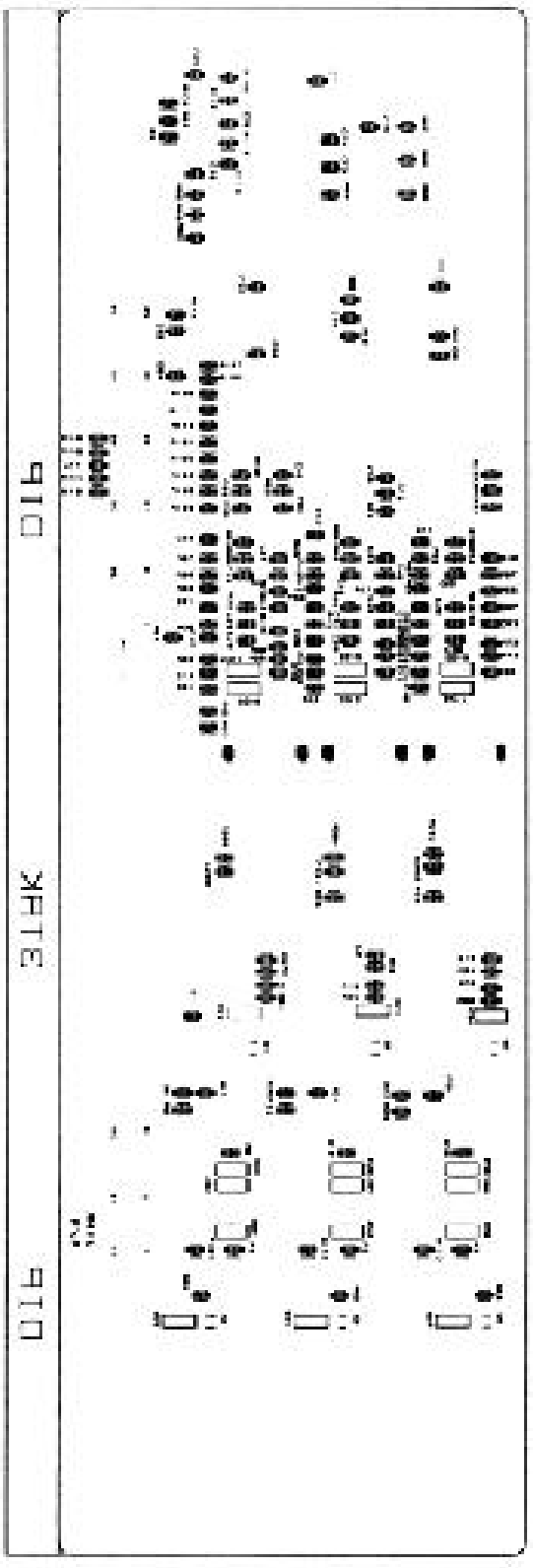


5-2 MEM

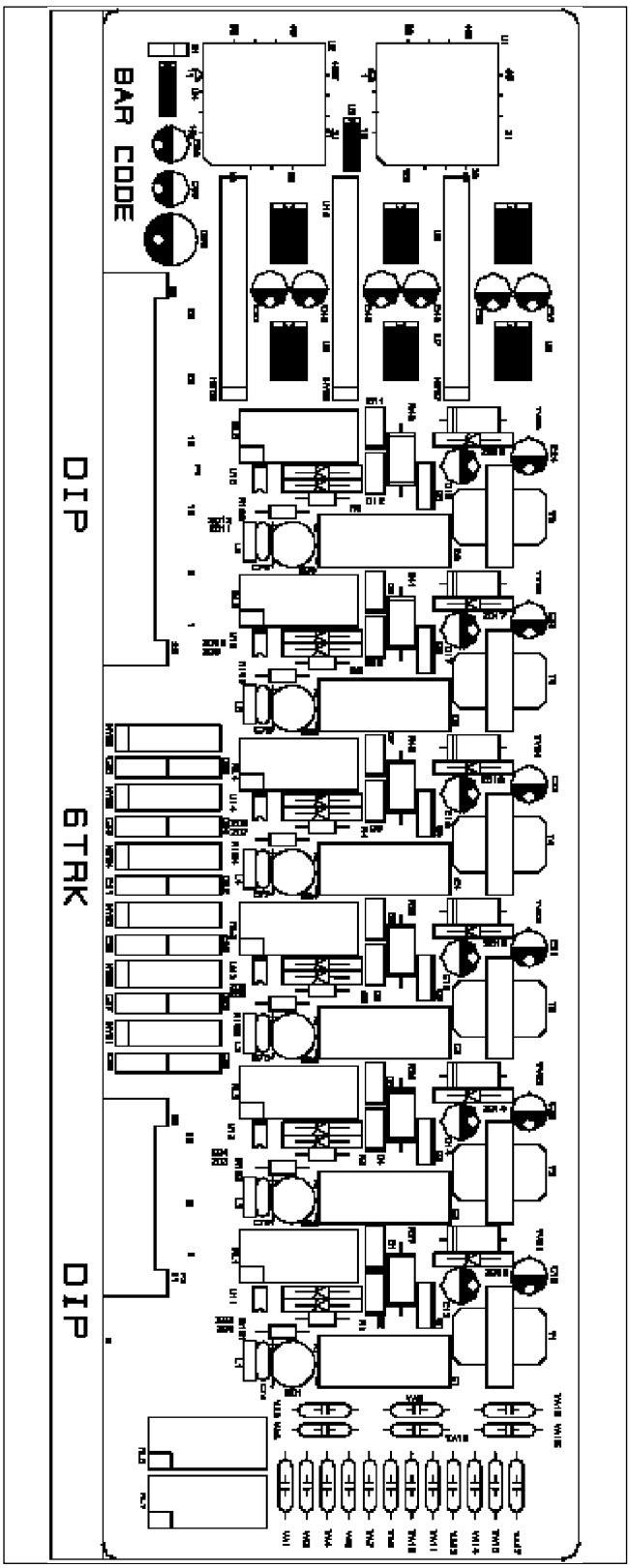


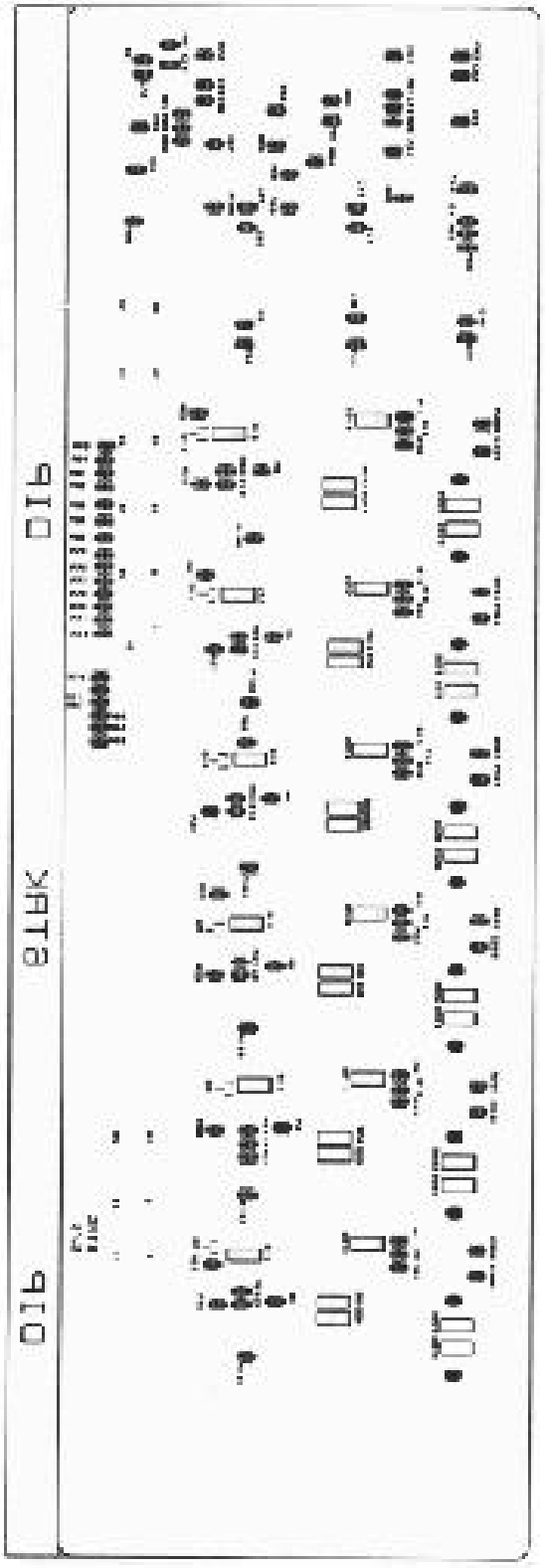
5-3 3TRK Card



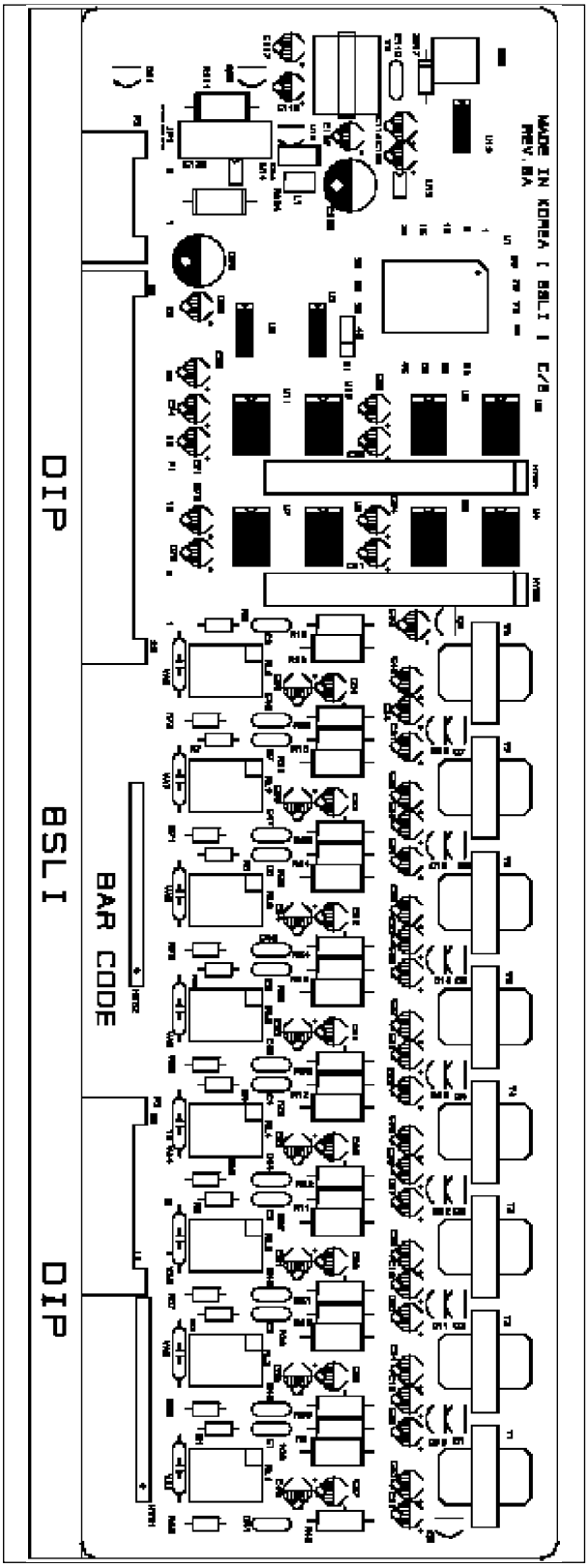


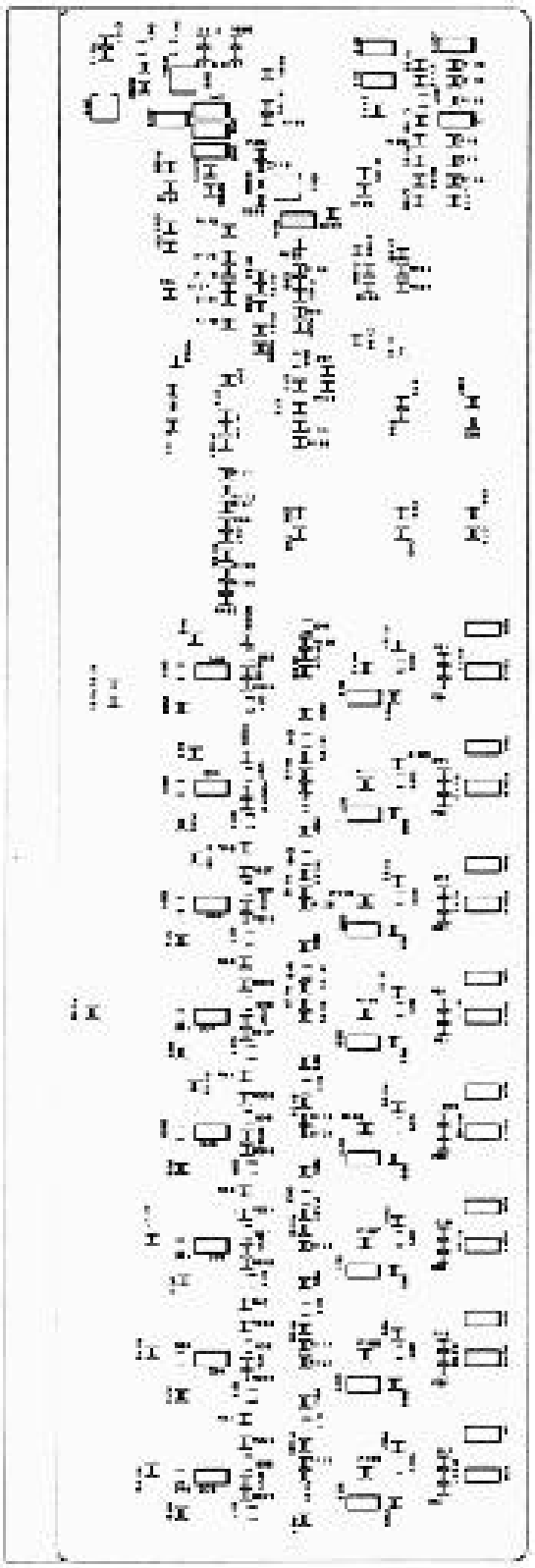
5-4 6TRK Card



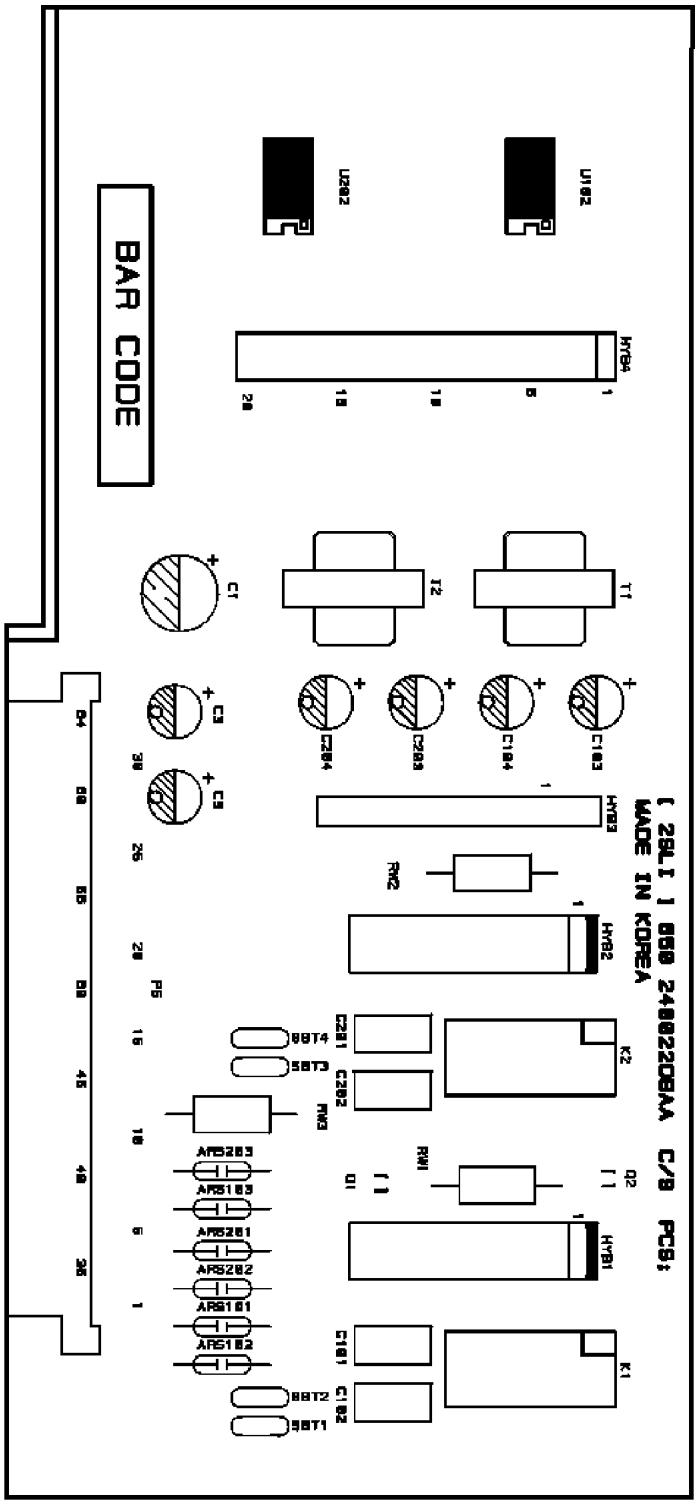


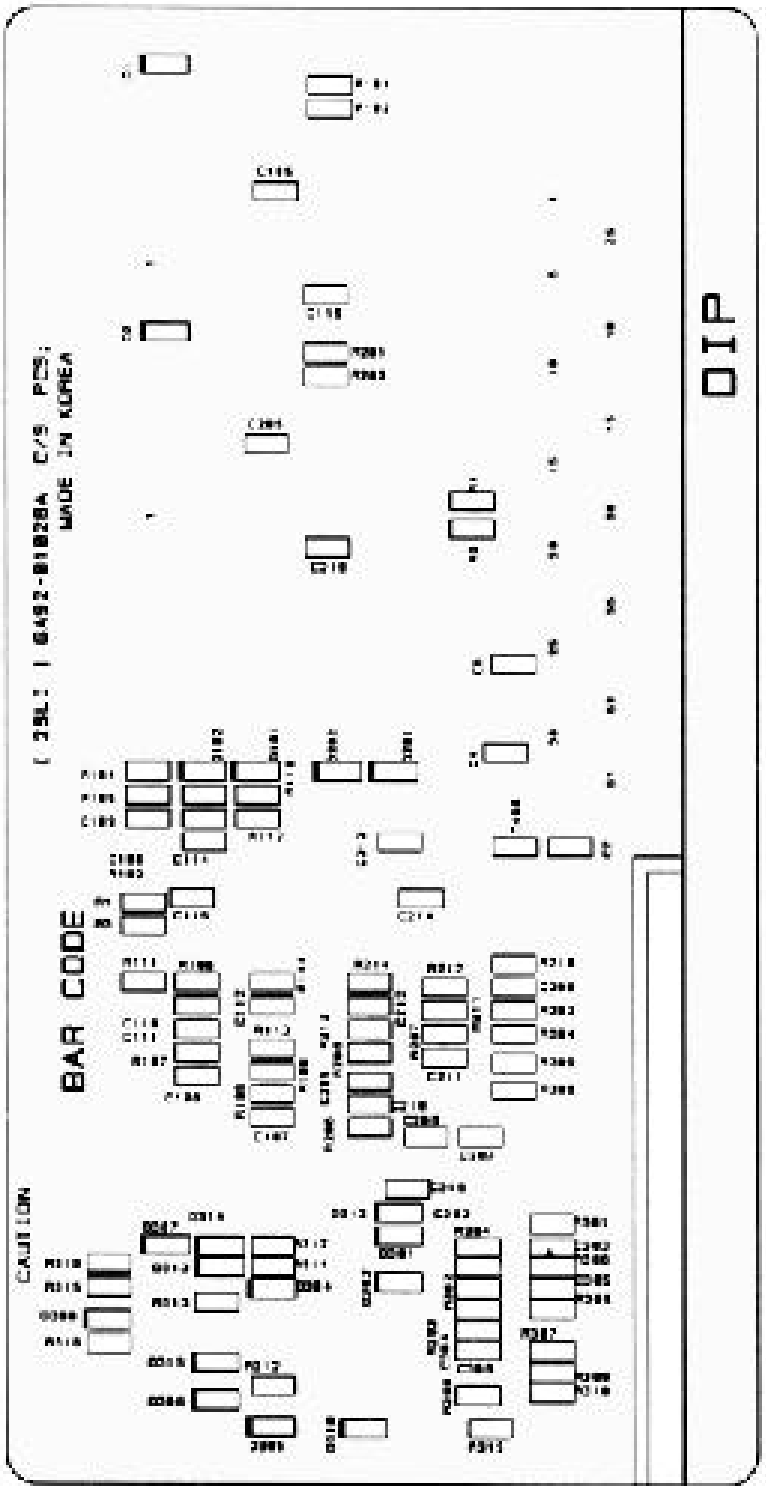
5-5 8SLI Card



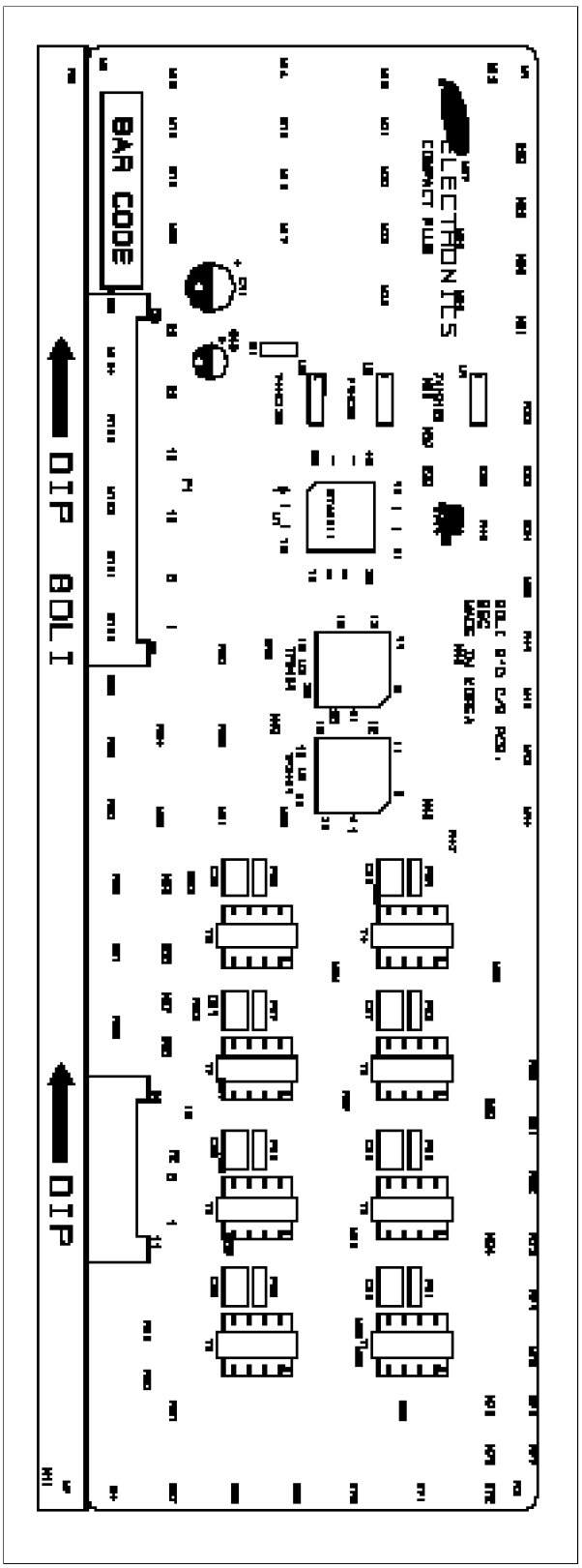


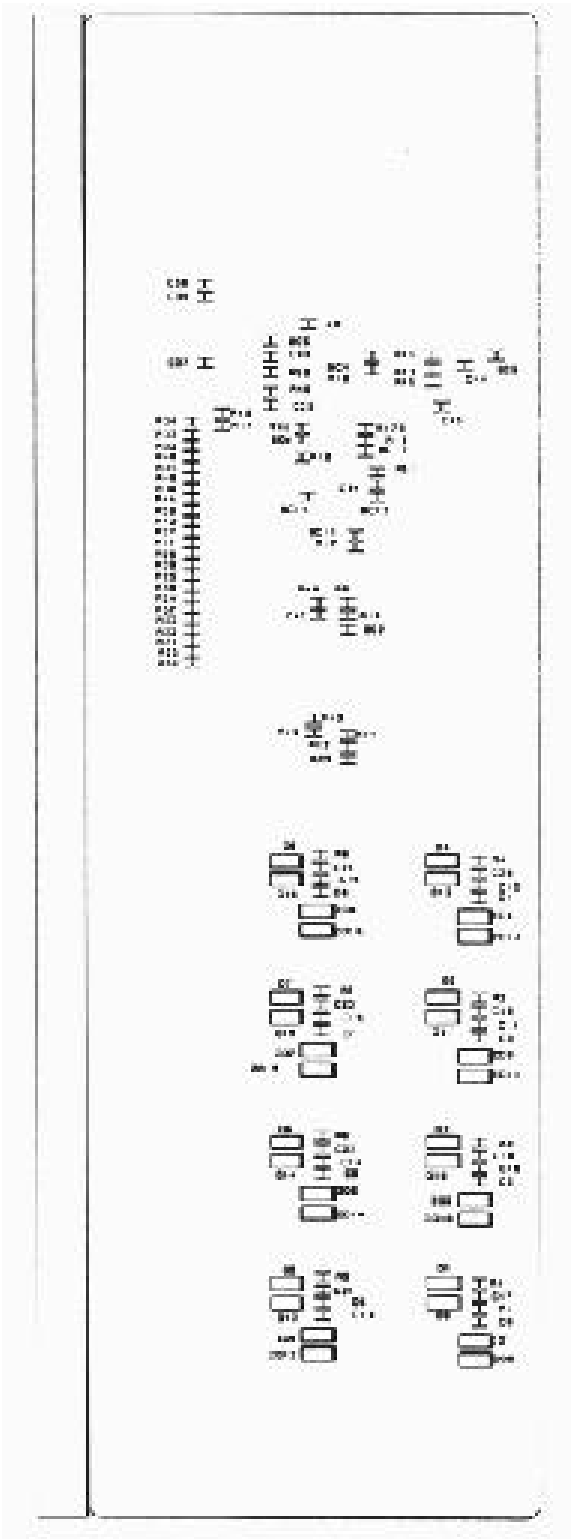
5-6 2SLI Card


BAR CODE
U282
U182
HYB4
T2
T1
C1
C3
C5
C284
C283
C184
C183
HYB3
RN2
HYB2
C281
C282
K2
RN3
RN1
Q1
Q2
HYB1
C181
C182
K1
[2SLI] 650 24002208AA C/B PCS:
MADE IN KOREA

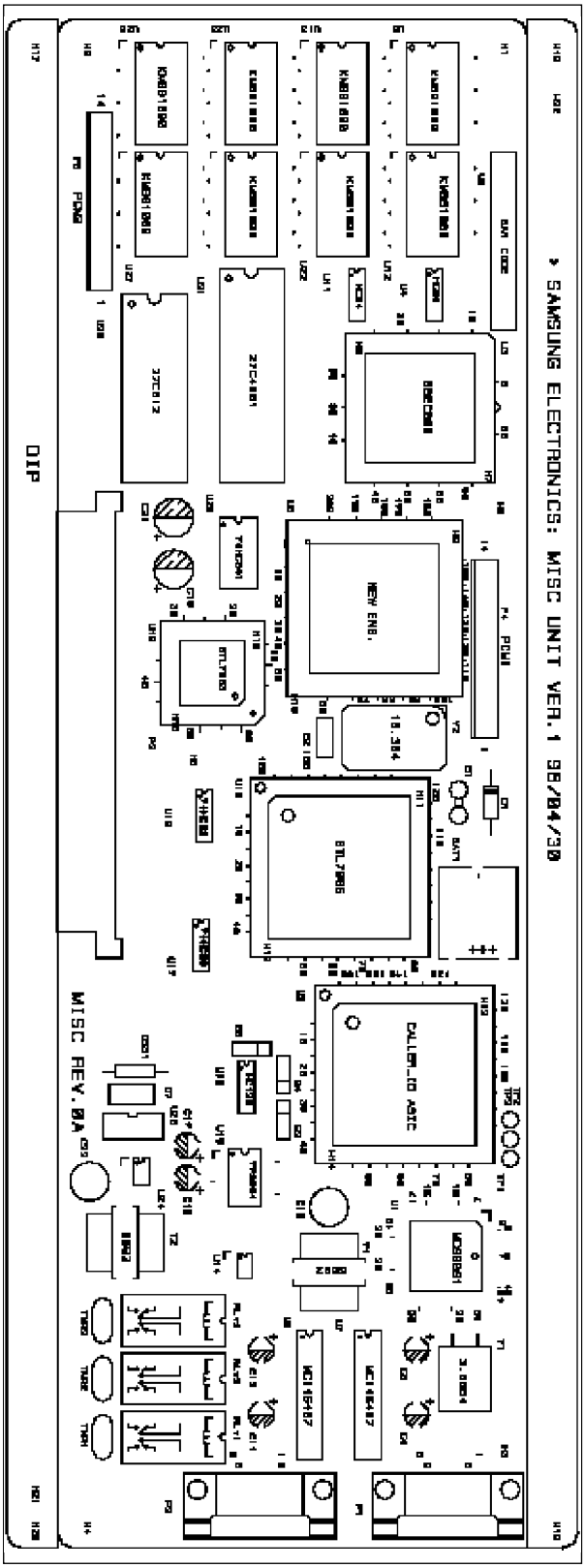

DIP
BAR CODE
MADE IN KOREA
CAUTION

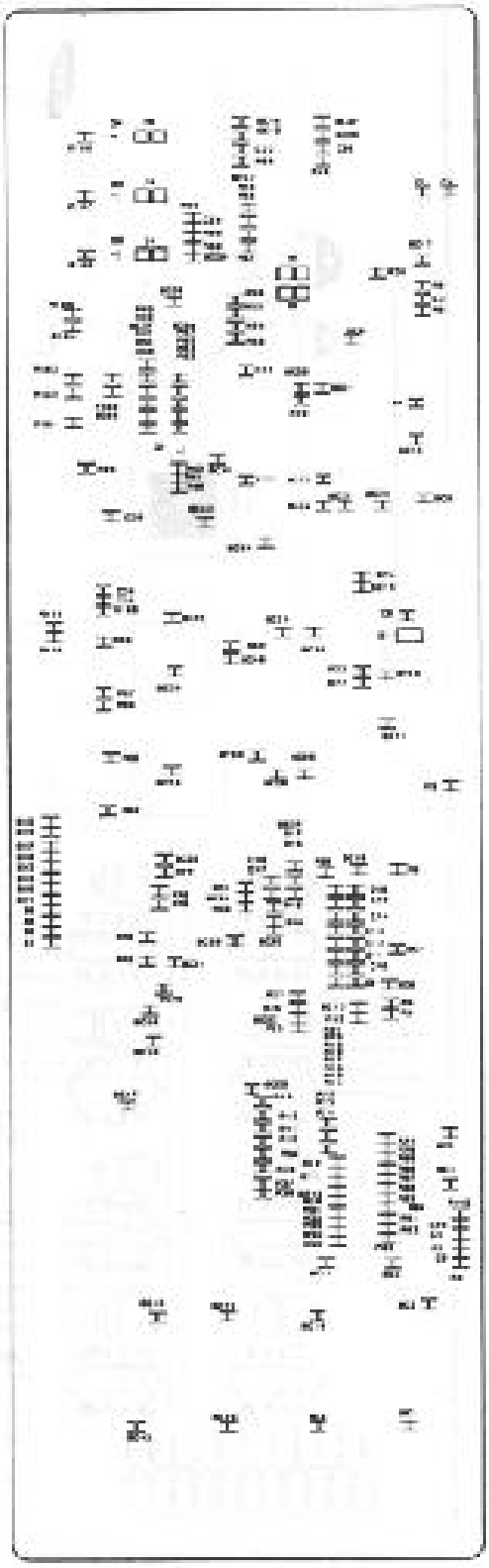
5-7 8DLI Card



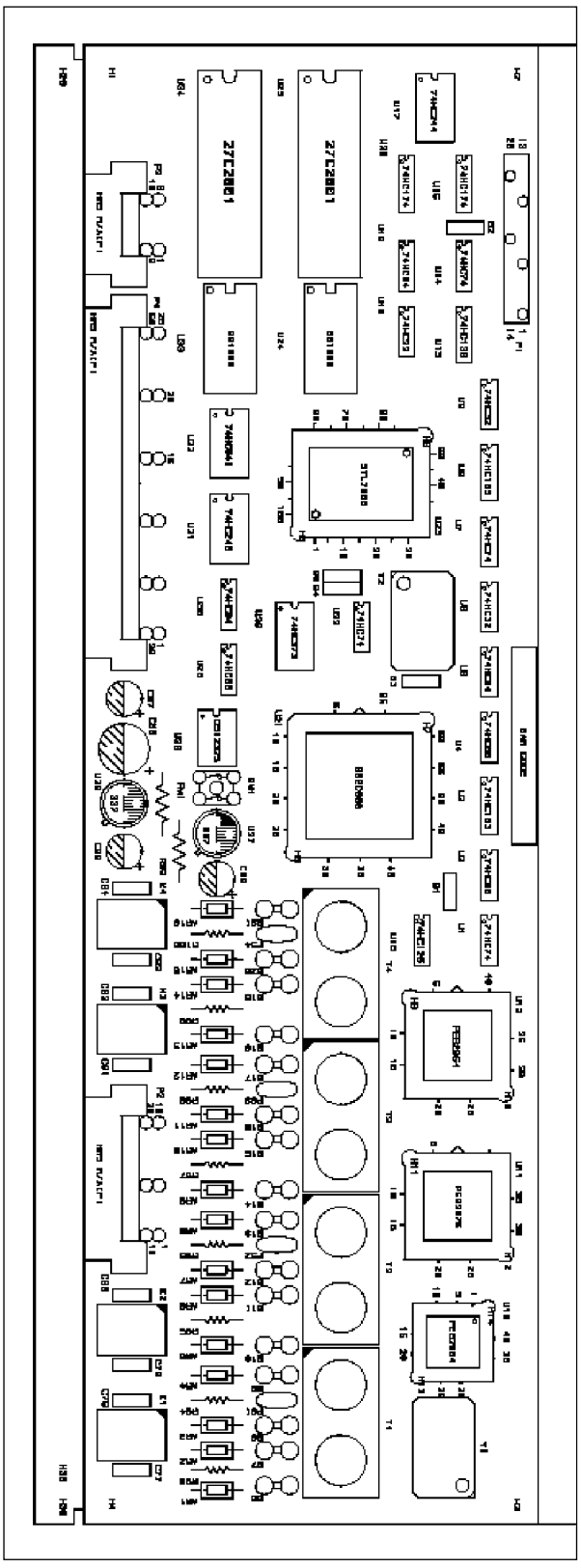


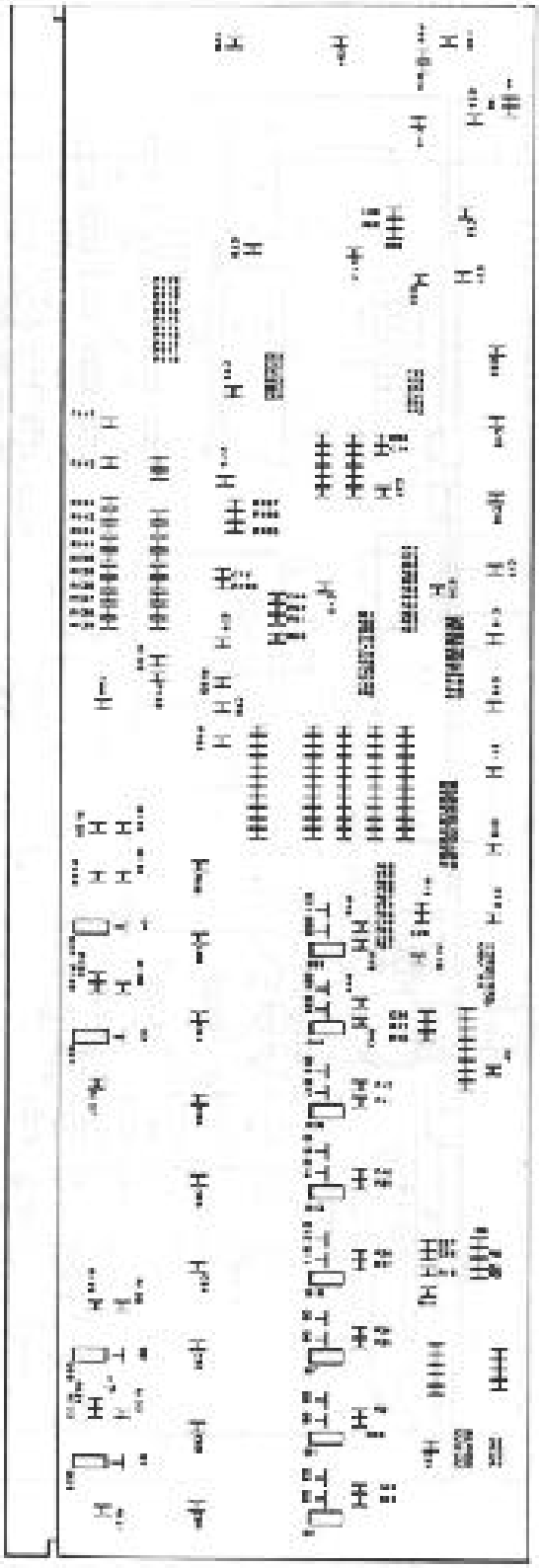
5-8 MISC 1/2 Card



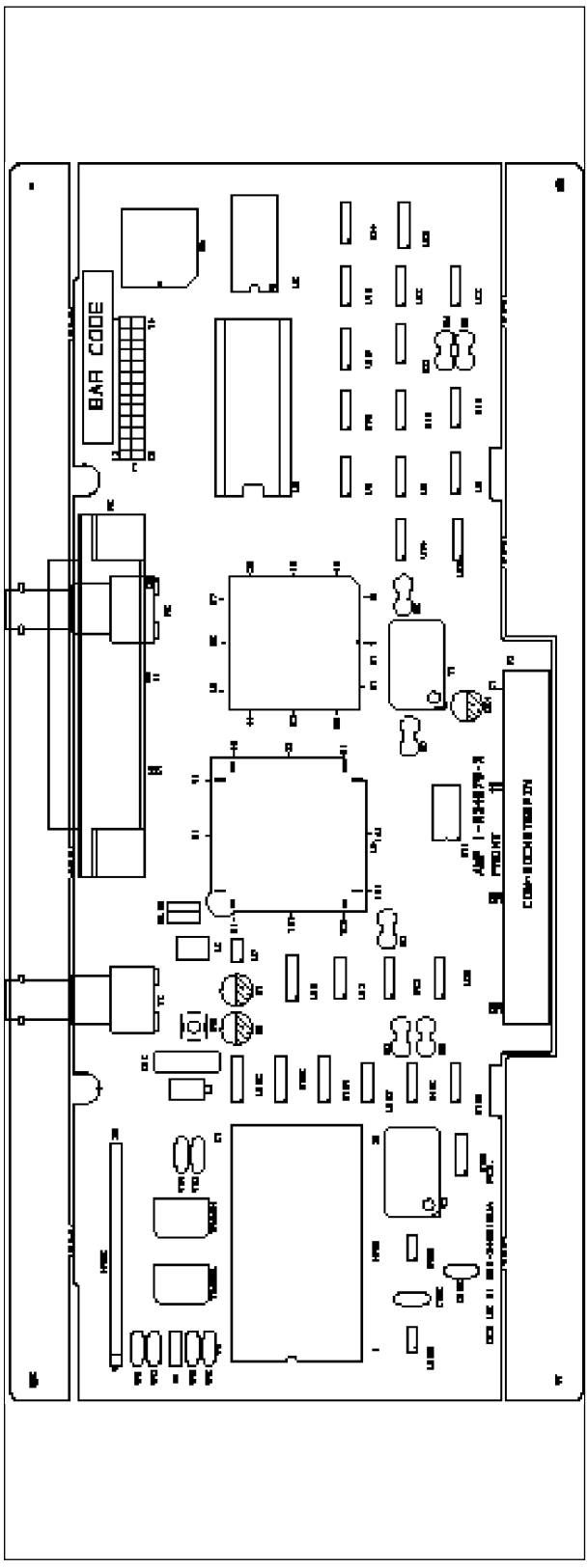


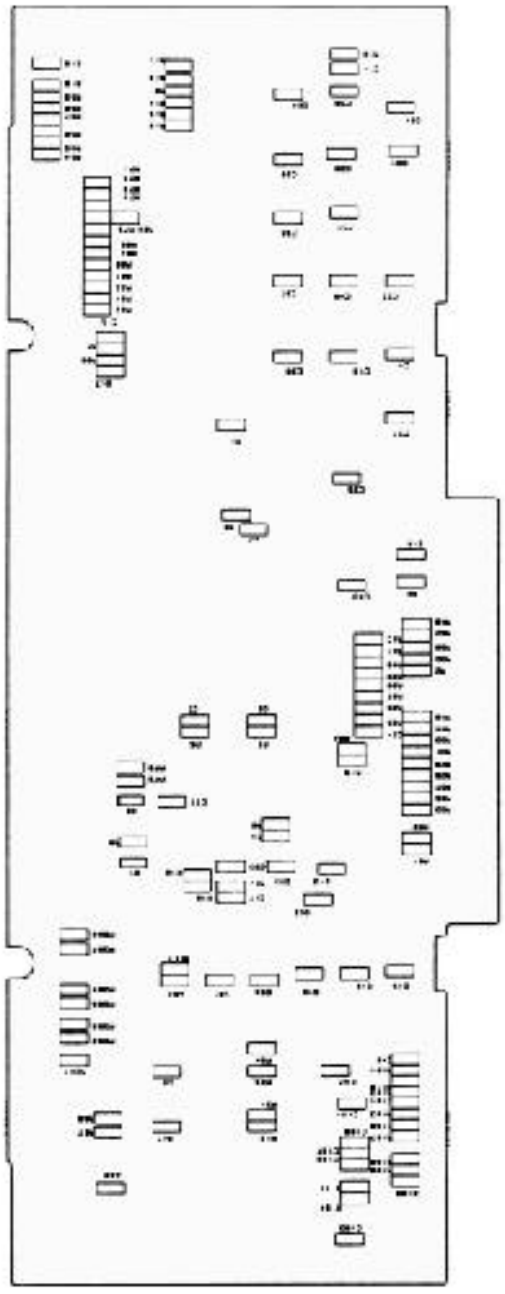
5-9 4S0T0 Card



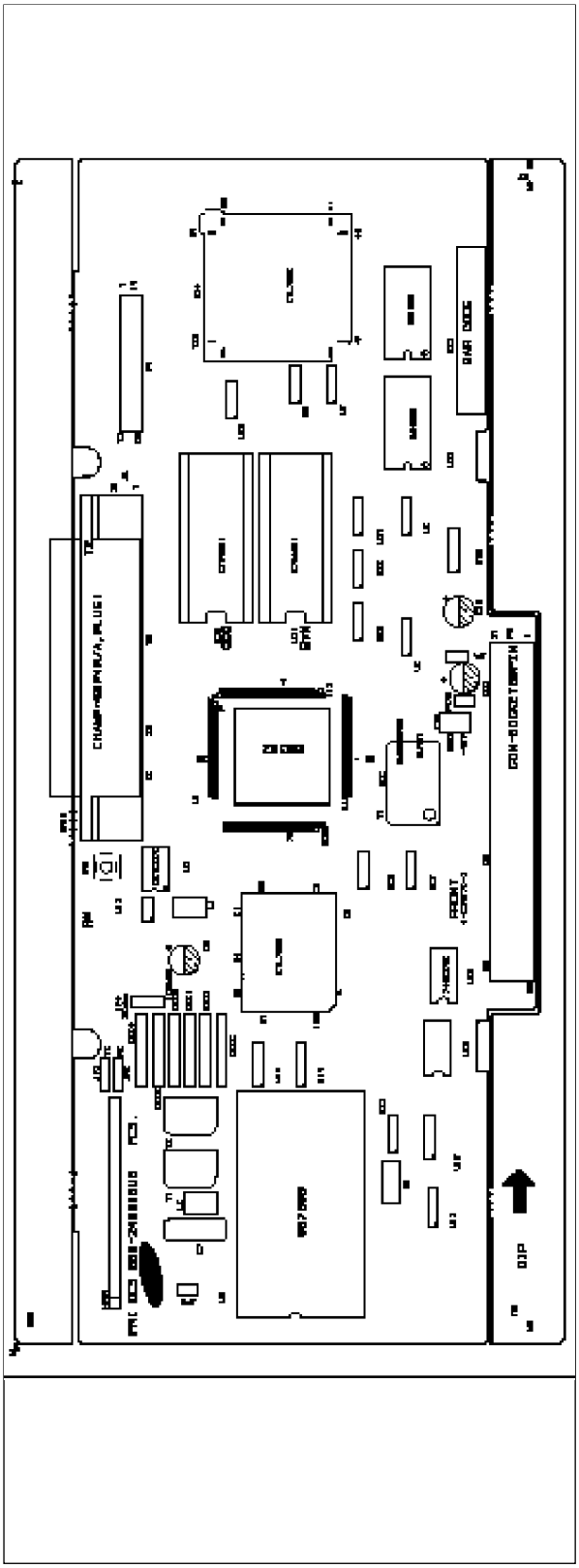


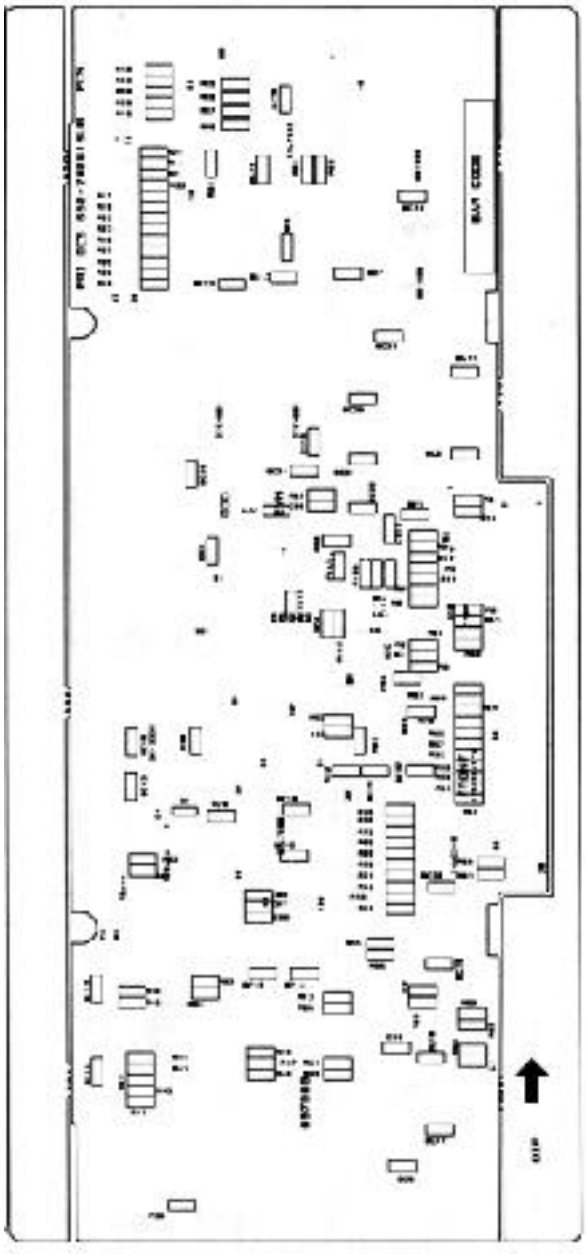
5-10 E1 Card



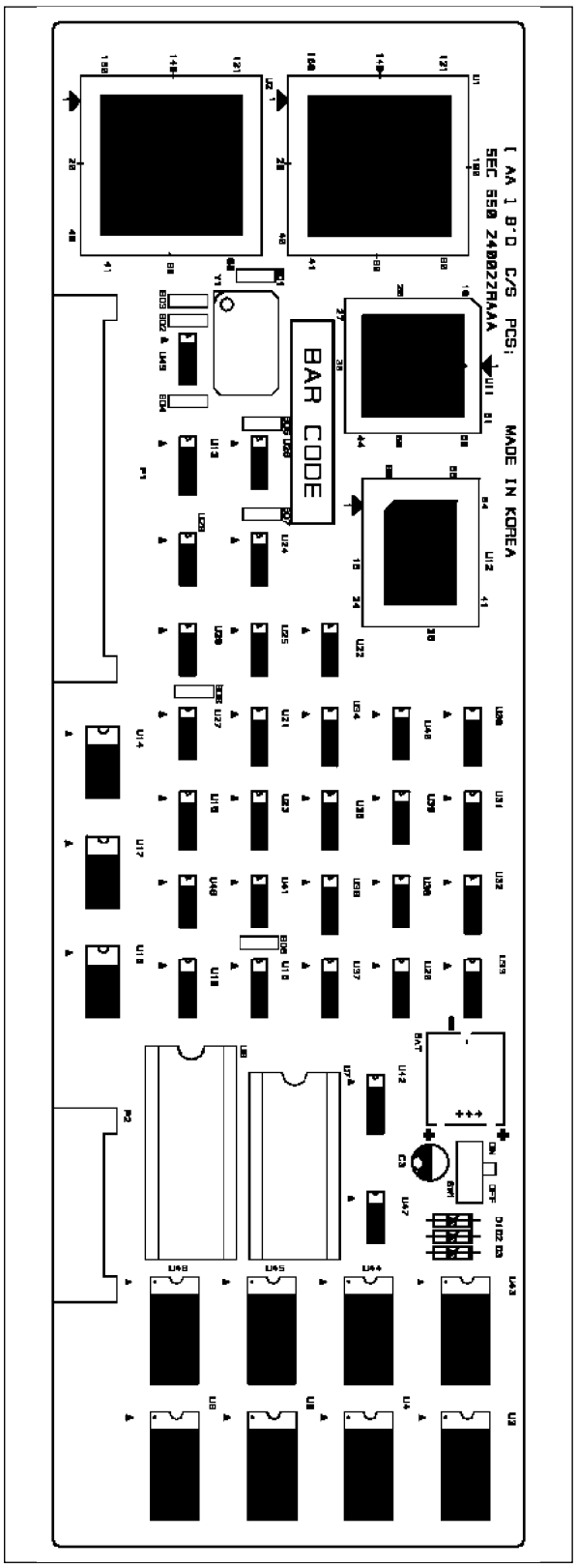


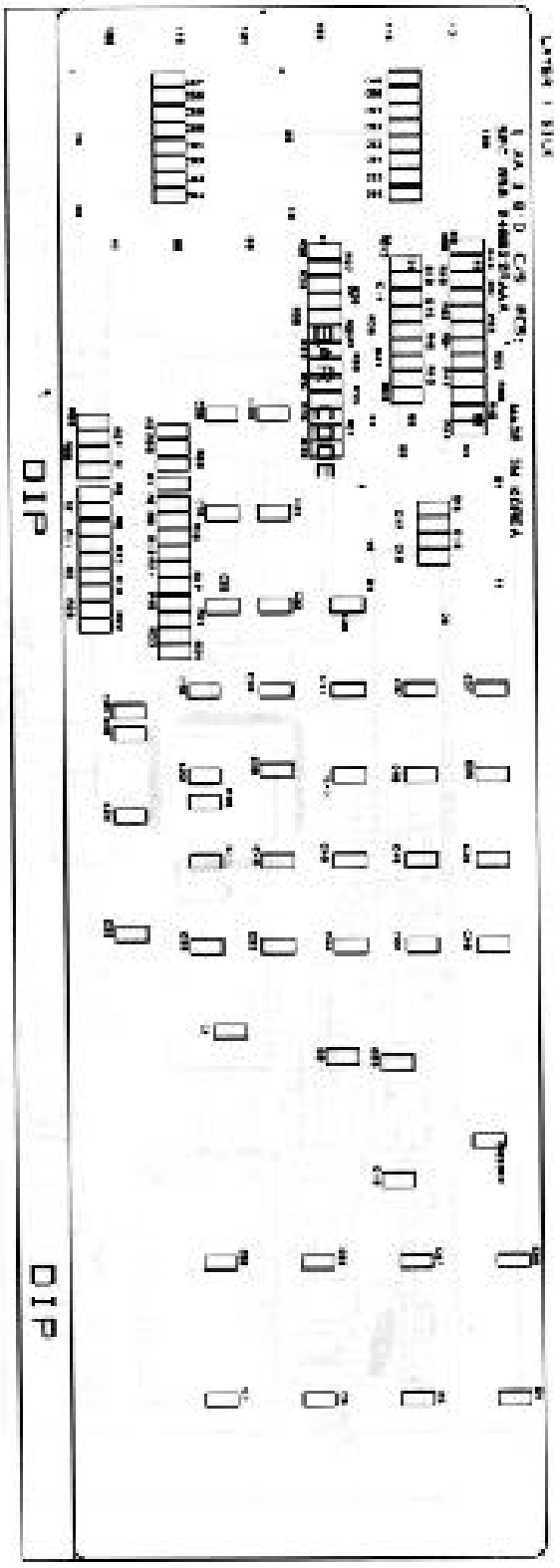
5-11 PRI Card



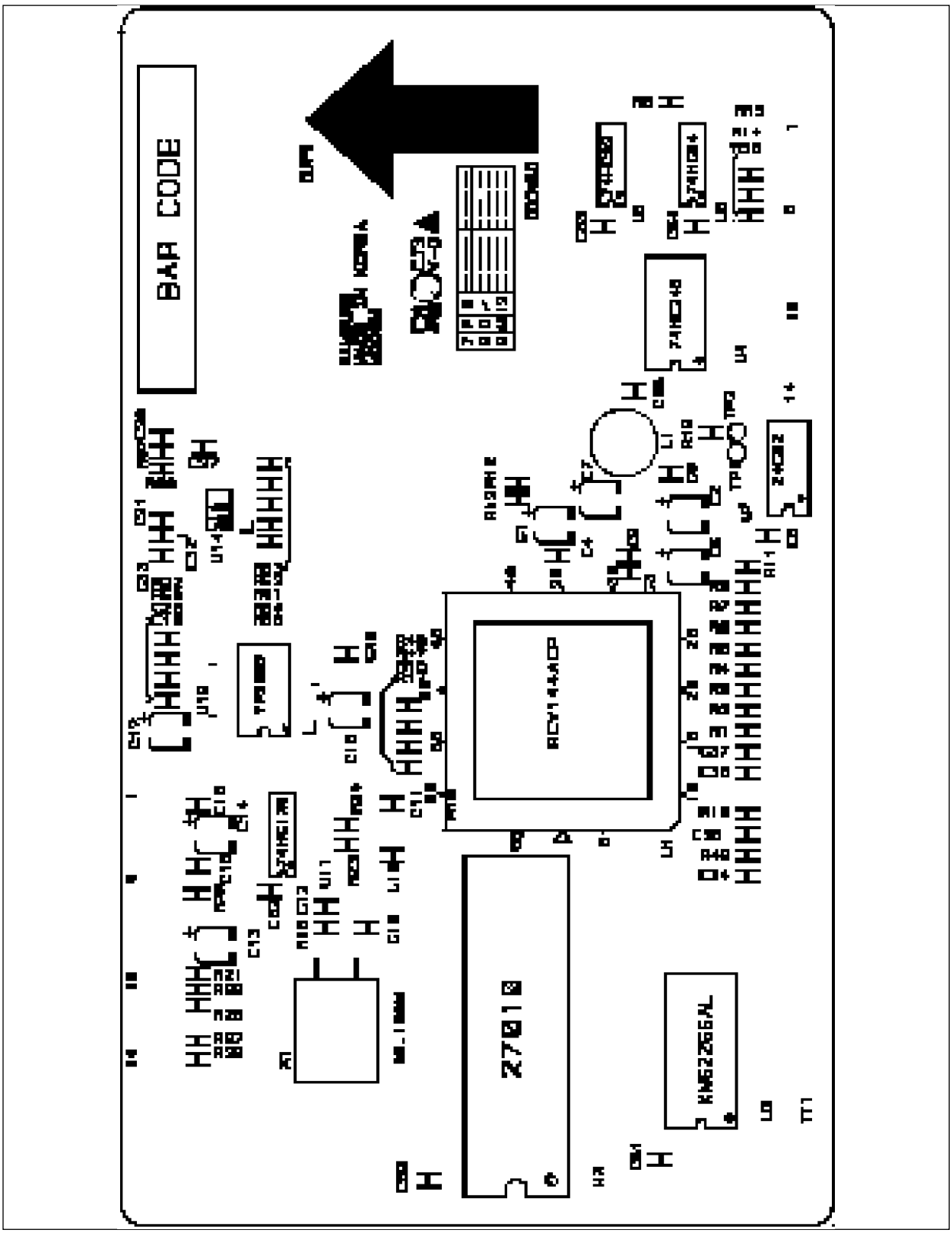


5-12 AA Card

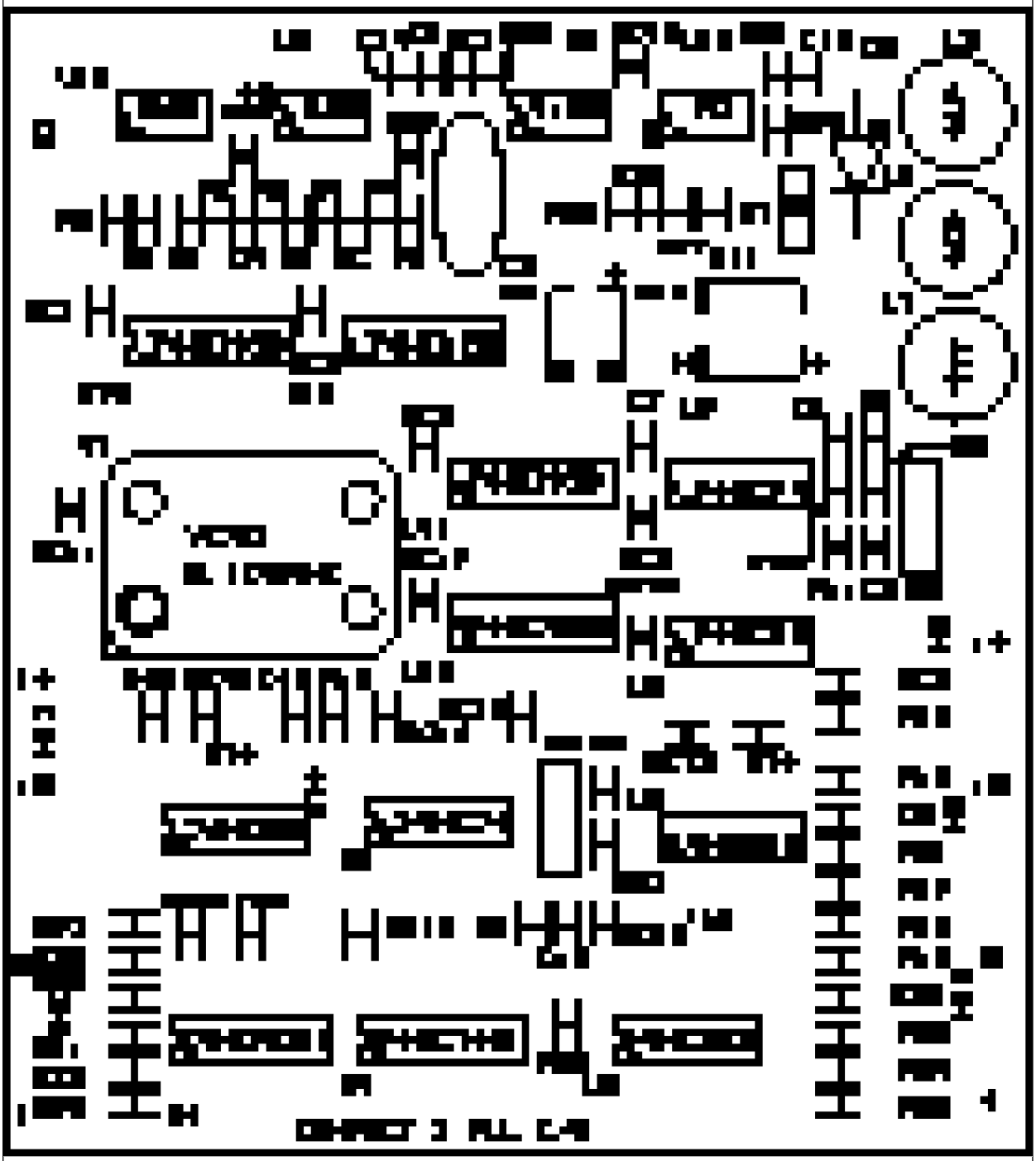




5-13 MODEM Card



5-14 PLL



Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

판 (ED)	일자 (DATE)								
성 명 (SIGN)									
판 (ED)	일자 (DATE)	01	1998.06.30						
성 명 (SIGN)									
승 인		검 도		설 계		제 도		DCS compact II 008 BASE	
APP		CH		ENG		DWG			
관련도번 REF. NO.						SEC	GADB-000118		1/3

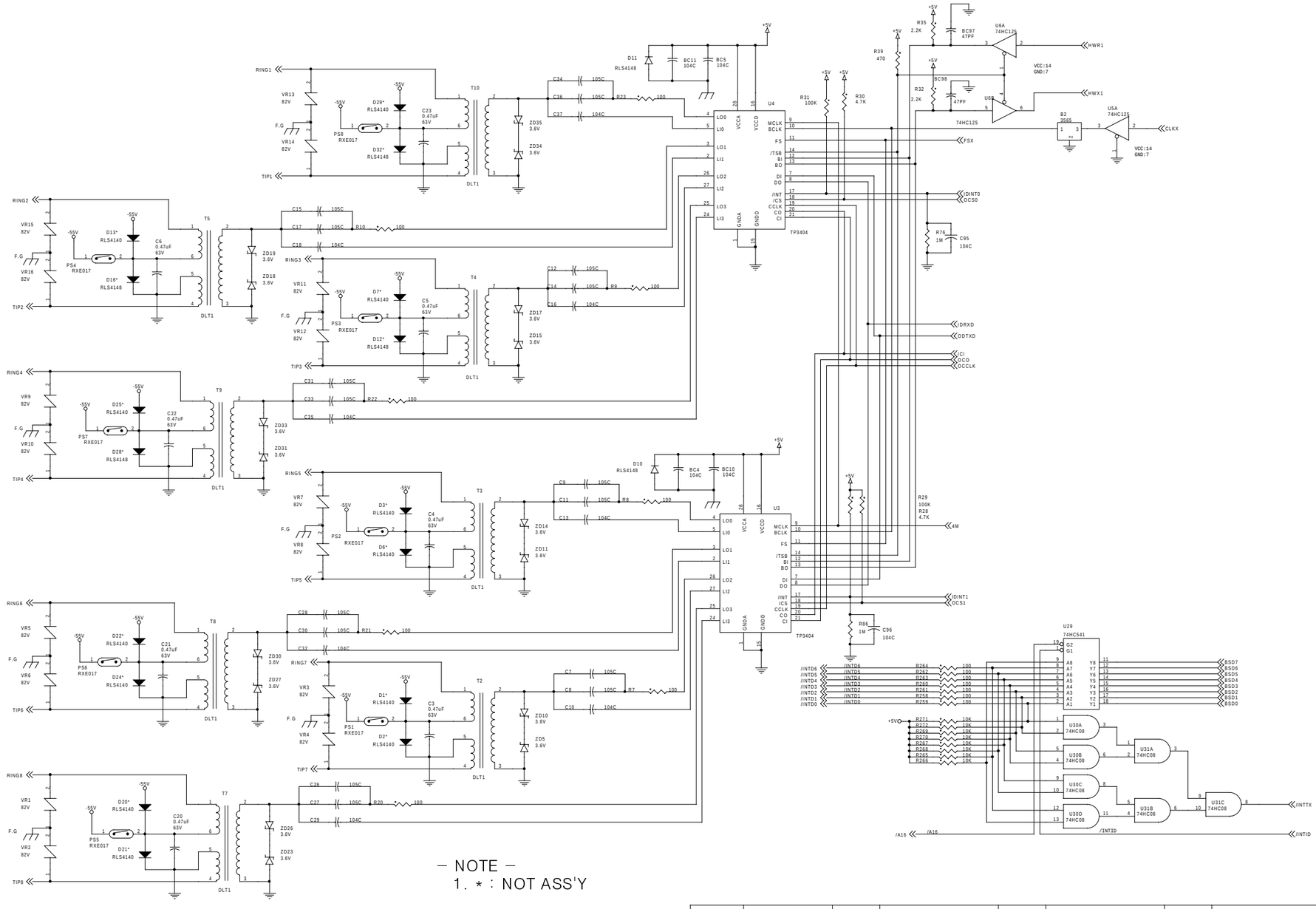
COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

판 (ED)	일자 (DATE)							
성 명 (SIGN)								
판 (ED)	일자 (DATE)	01	1998.06.30					
성 명 (SIGN)								
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG		DCS compact II 008 BASE
관련도번 REF. NO.					SEC	GADB-000118		2/3

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

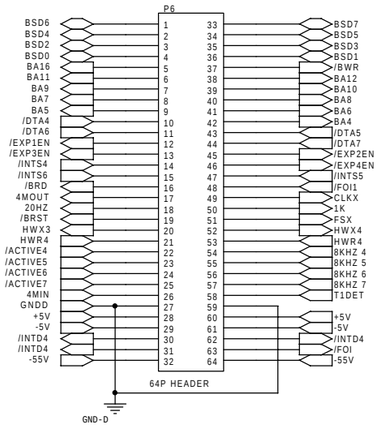


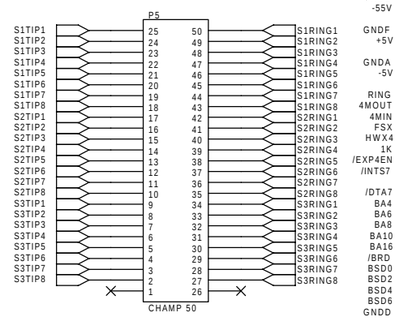
— NOTE —
1. * : NOT ASS'Y

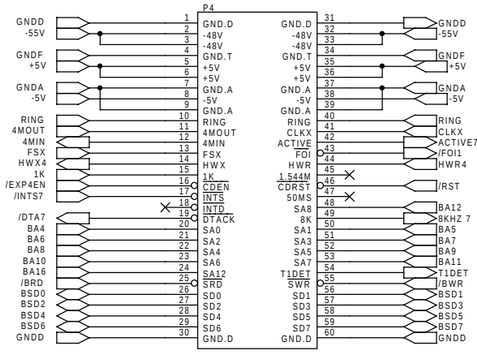
판 (ED)	일자 (DATE)							
성 명 (SIGN)								
판 (ED)	일자 (DATE)	01	1998.06.30					
성 명 (SIGN)								
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG		DCS compact II 008 BASE
관련 도번 REF. NO.							SEC	GADB-000118 3/3

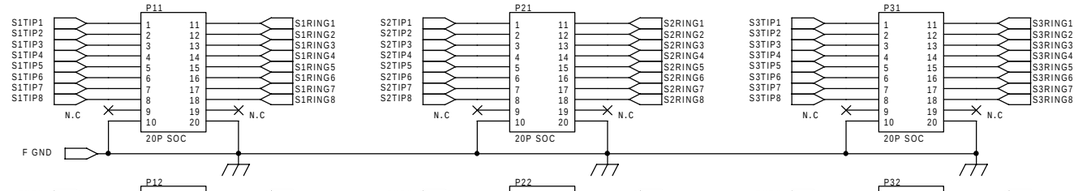
COMPUTER AIDED DESIGN

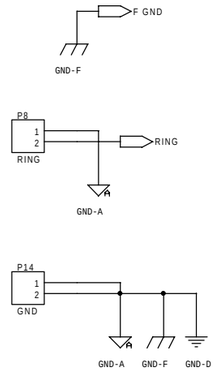
Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

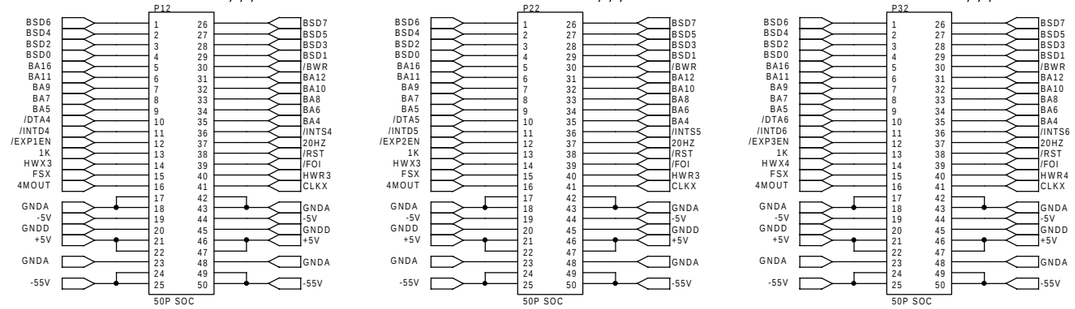

P6
BSD6 BSD4 BSD2 BSD0 BA16 BA11 BA9 BA7 BA5 /DTA4 /DTA6 /EXP1EN /EXP3EN /INTS4 /INTS6 /BRD 4MOUT 20HZ /BRST HWX3 HWR4 /ACTIVE4 /ACTIVE5 /ACTIVE6 /ACTIVE7 4MIN GNDD +5V -5V /INTD4 /INTD4 -55V
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64
BSD7 BSD5 BSD3 BSD1 /BWR BA12 BA10 BA8 BA6 BA4 /DTA5 /DTA7 /EXP2EN /EXP4EN /INTS5 /FOI1 CLKX 1K FSX HWX4 HWR4 8KHZ 4 8KHZ 5 8KHZ 6 8KHZ 7 T1DET +5V -5V /INTD4 /FOI -55V
64P HEADER
GND-D

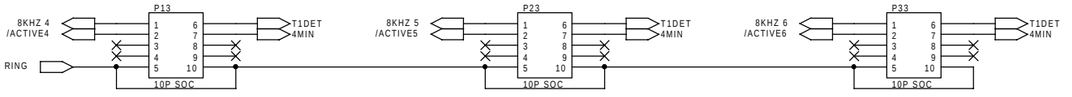

P5
S1TIP1 S1TIP2 S1TIP3 S1TIP4 S1TIP5 S1TIP6 S1TIP7 S1TIP8 S2TIP1 S2TIP2 S2TIP3 S2TIP4 S2TIP5 S2TIP6 S2TIP7 S2TIP8 S3TIP1 S3TIP2 S3TIP3 S3TIP4 S3TIP5 S3TIP6 S3TIP7 S3TIP8
25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
50 49 48 47 46 45 44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26
S1RING1 S1RING2 S1RING3 S1RING4 S1RING5 S1RING6 S1RING7 S1RING8 S2RING1 S2RING2 S2RING3 S2RING4 S2RING5 S2RING6 S2RING7 S2RING8 S3RING1 S3RING2 S3RING3 S3RING4 S3RING5 S3RING6 S3RING7 S3RING8
CHAMP 50


P4
GNDD -55V GNDF +5V GNDA -5V RING 4MOUT 4MIN FSX HWX4 1K /EXP4EN /INTS7 /DTA7 BA4 BA6 BA8 BA10 BA16 /BRD BSD0 BSD2 BSD4 BSD6 GNDD
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
GND.D -48V -48V GND.T +5V +5V GND.A -5V GND.A RING 4MOUT 4MIN FSX HWX 1K CDEN INTS INTD DTACK SA0 SA2 SA4 SA6 SA12 SRD SD0 SD2 SD4 SD6 GND.D
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
GND.D -48V -48V GND.T +5V +5V GND.A -5V GND.A RING CLKX ACTIVE FOI HWR 1.544M CDRST 50MS SA8 8K SA1 SA3 SA5 SA7 T1DET SWR SD1 SD3 SD5 SD7 GND.D
GNDD -55V GNDF +5V GNDA -5V RING CLKX ACTIVE7 FOI1 HWR4 /RST BA12 8KHZ 7 BA5 BA7 BA9 BA11 T1DET /BWR BSD1 BSD3 BSD5 BSD7 GNDD
60P HEADER


P11
S1TIP1 S1TIP2 S1TIP3 S1TIP4 S1TIP5 S1TIP6 S1TIP7 S1TIP8
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
S1RING1 S1RING2 S1RING3 S1RING4 S1RING5 S1RING6 S1RING7 S1RING8
N.C N.C
20P SOC
P21
S2TIP1 S2TIP2 S2TIP3 S2TIP4 S2TIP5 S2TIP6 S2TIP7 S2TIP8
S2RING1 S2RING2 S2RING3 S2RING4 S2RING5 S2RING6 S2RING7 S2RING8
N.C N.C
20P SOC
P31
S3TIP1 S3TIP2 S3TIP3 S3TIP4 S3TIP5 S3TIP6 S3TIP7 S3TIP8
S3RING1 S3RING2 S3RING3 S3RING4 S3RING5 S3RING6 S3RING7 S3RING8
N.C N.C
20P SOC
F GND







판 (ED) | 일 자 (DATE)							
서 명 (SIGN)							
판 (ED) | 일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)							

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II EXP. BASE

관련도번 REF. NO.

SEC **GADB-000119** 1/1

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

D[0..15]
A[1..20]
/MWRLDS
/MWRUDS
/MRDLDS
/MRDUDS
/RESET
/RAM EN1
/RTC EN
/WAT EN
/LED EN
/ROMEN1
/ROMEN2

JP1
HEAD 64
/MWRLDS
/MWRUDS
/RAMEN2
/ROMEN1
/WAT.EN
/LED EN
/MRDLDS
/MRDUDS
/RAMEN1
/ROMEN2
/RTC EN
/RESET

U2 681000 (32P SOIC TYPE)
U9 681000 (32P SOIC TYPE)
U1 681000 (32P SOIC TYPE)
U8 681000 (32P SOIC TYPE)
U12 RTC72423 STP.P (24P SOIC Type)
U10 DS1232/DIP
U11 74HC138 VCC:16 GND:8
U7A 74HC74
U4 27C4001
U3 27C4001
U6 27C4001
U5 27C4001

C2 104C
C13 104C
C3 104C
C14 10U/50V
C15 104C
C9 104C
C6 104C
C12 104C
C7 104C
C5 104C
C10 10U/50V
C11 104C
C1 104C
C8 104C
C4 104C

R6 300K
R7 10K
R8 100
R5 100
R4 100
R1 330
R2 10K
R3 100

SW1 (TACT)
SW RESET
SW2 SLIDE SW (ANGLE)
BACK-UP
LED1
CPU MONITOR LED
D1 1N5819
D2 1N5819
D3 1N5819
BT1 SUPERCAP-5.5V/1F

판 (ED) | 일 자 (DATE)									
서 명 (SIGN)									
판 (ED) | 일 자 (DATE)	01	1998.06.30							
서 명 (SIGN)									

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

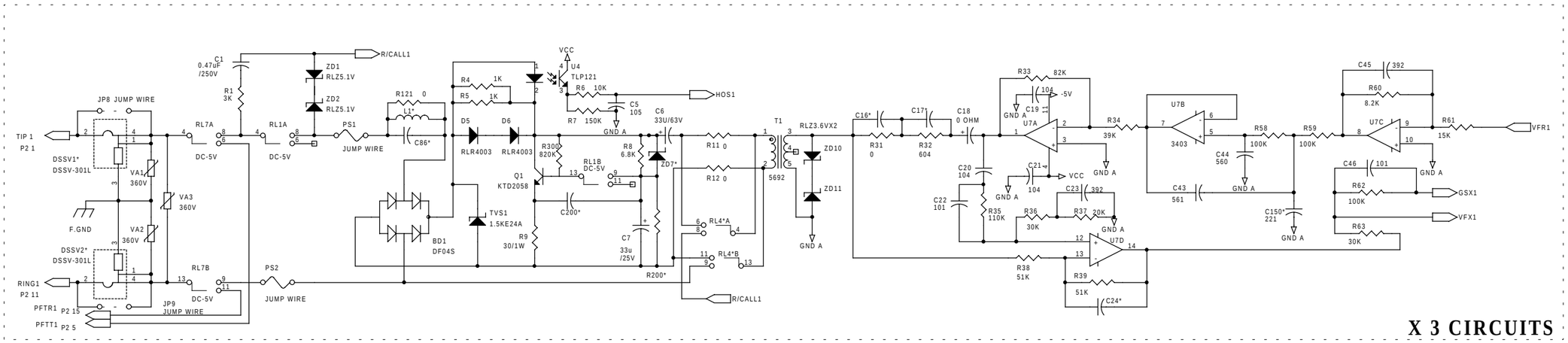
DCS compact II MEM

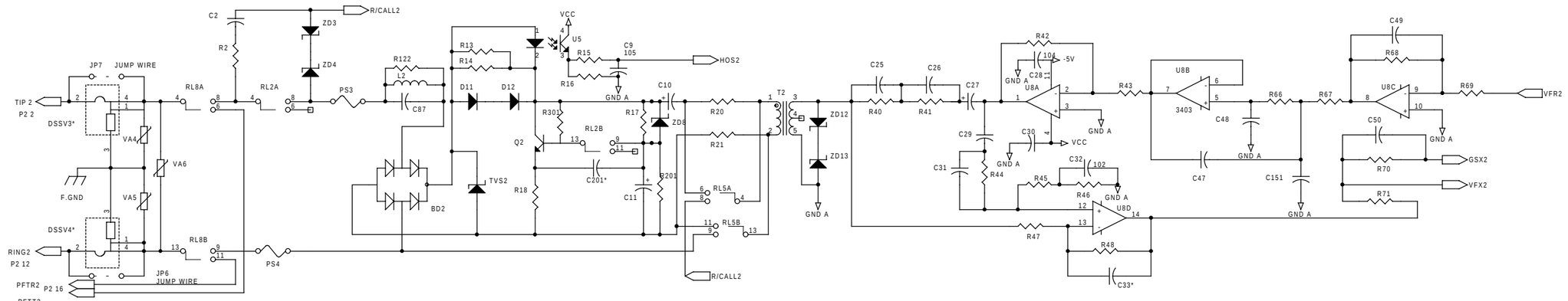
관련도번 REF. NO.

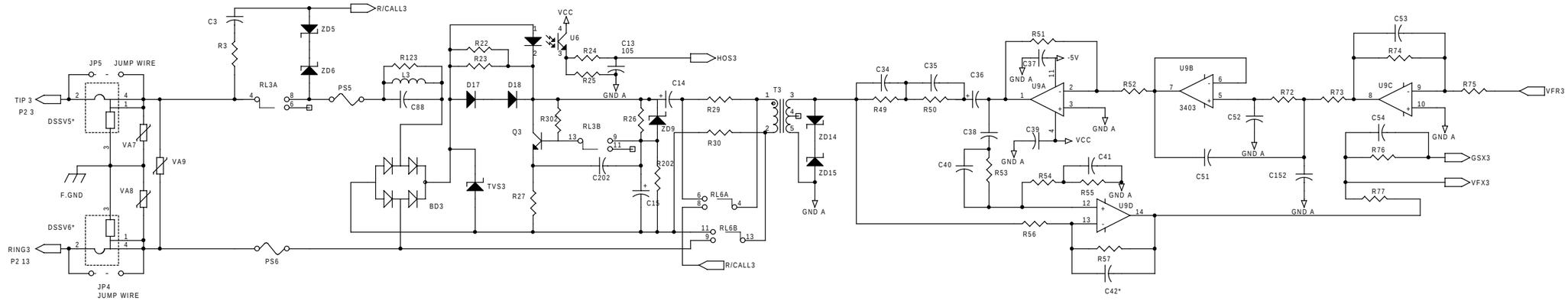
SEC **GADB-000128** 1/1

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.







판 (ED) | 일 자 (DATE)									
서 명 (SIGN)									
판 (ED) | 일 자 (DATE)	01	1998.06.30							
서 명 (SIGN)									

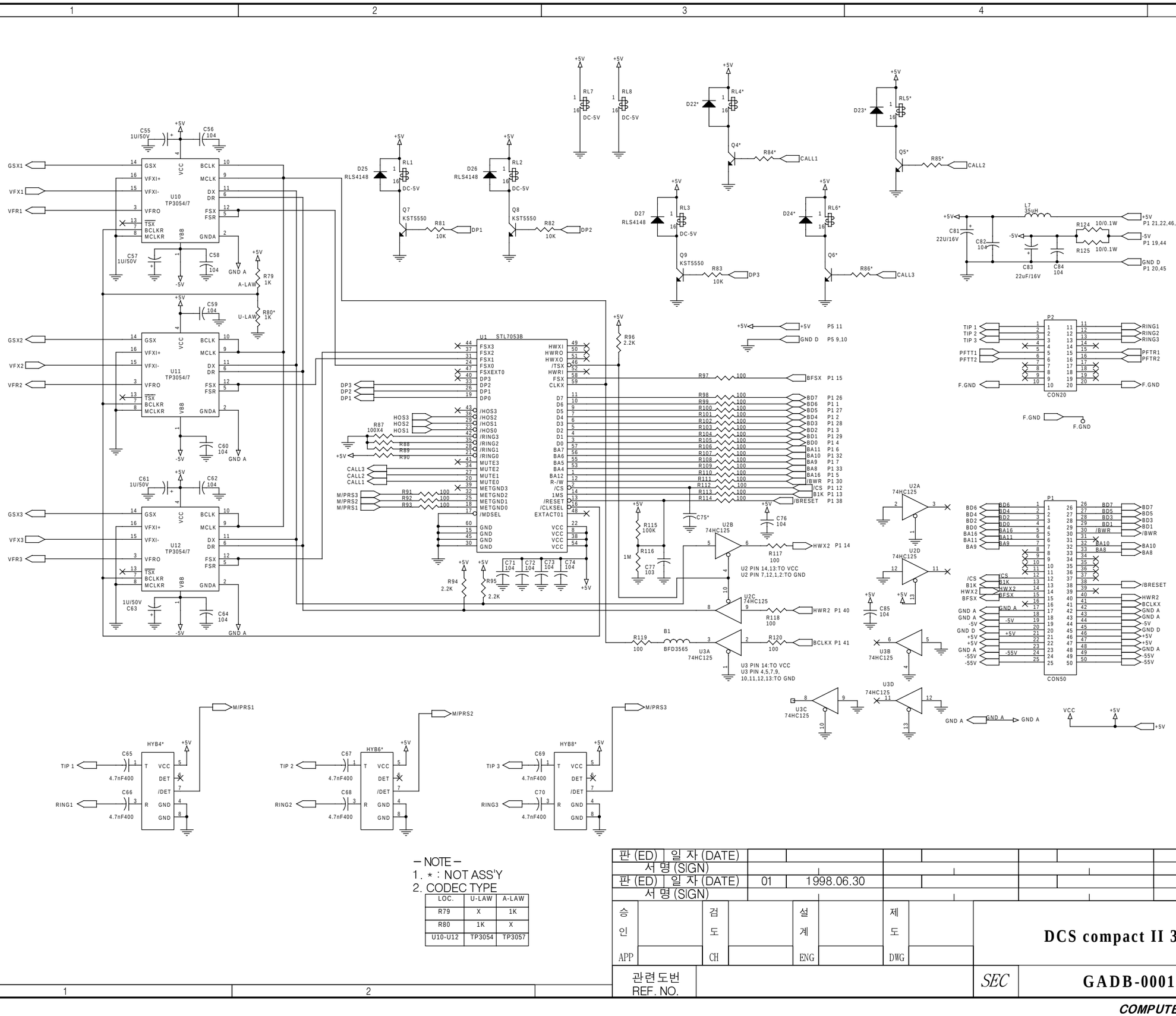
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II 3TRK

관련도번 REF. NO.		SEC	GADB-000121	1/2

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



- NOTE -
1. * : NOT ASS'Y
2. CODEC TYPE

LOC.	U-LAW	A-LAW
R79	X	1K
R80	1K	X
U10-U12	TP3054	TP3057

판 (ED) | 일 자 (DATE)							
서 명 (SIGN)							
판 (ED) | 일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)							

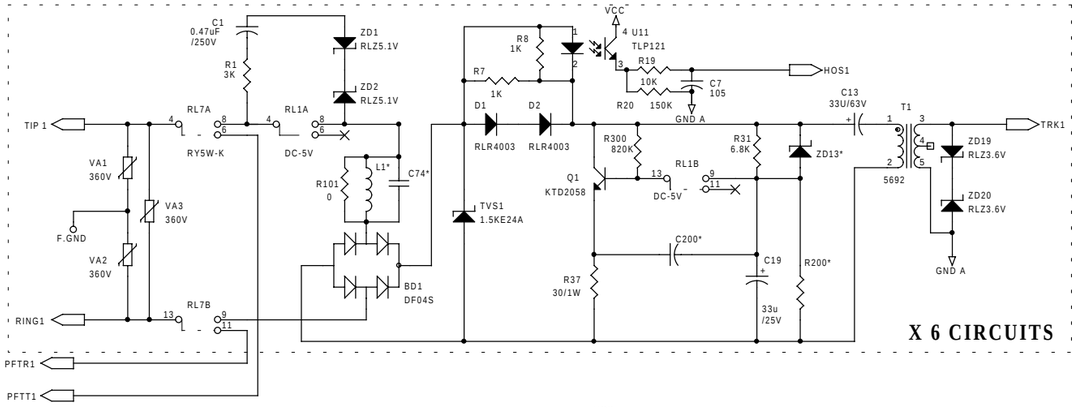
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

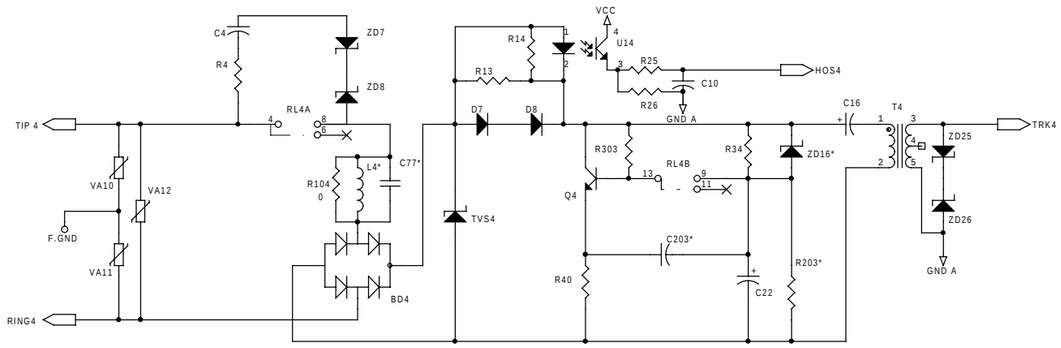
DCS compact II 3TRK

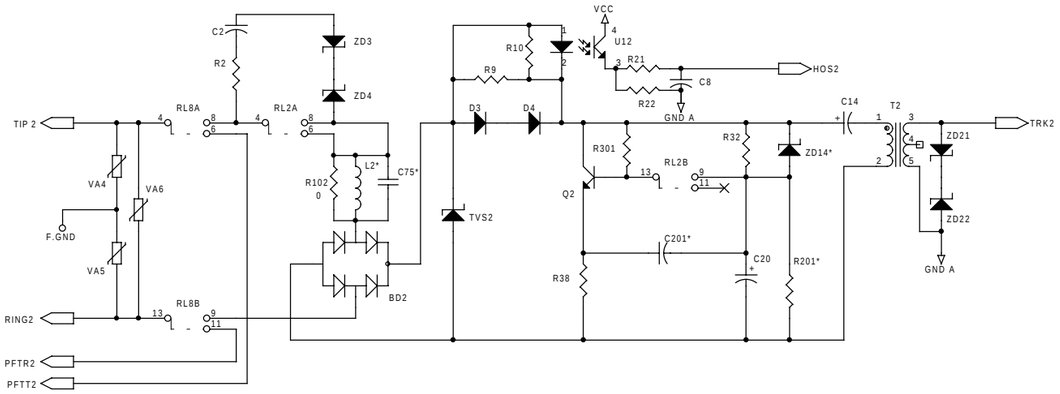
관련도번 REF. NO.		SEC	GADB-000121	2/2

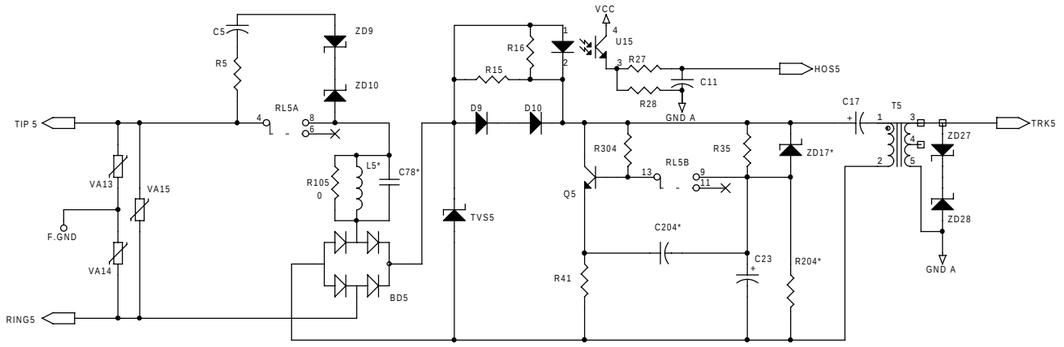
COMPUTER AIDED DESIGN

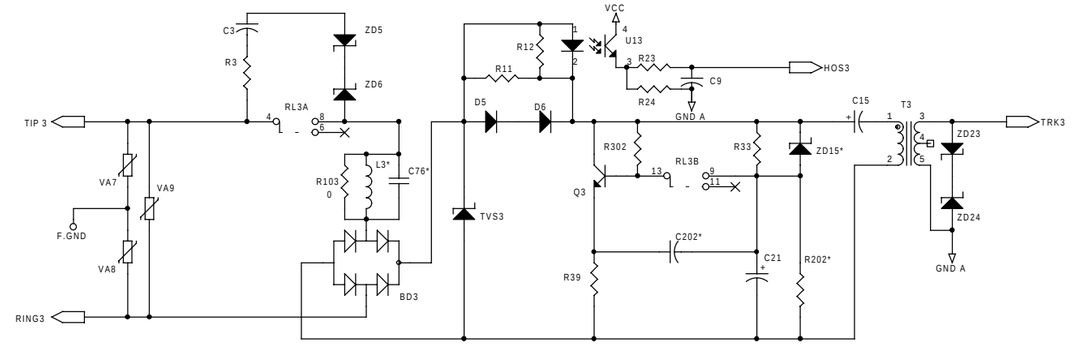
Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

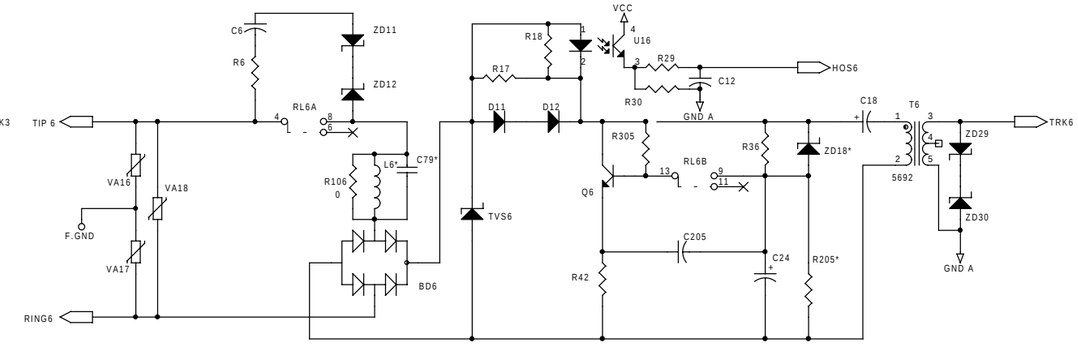


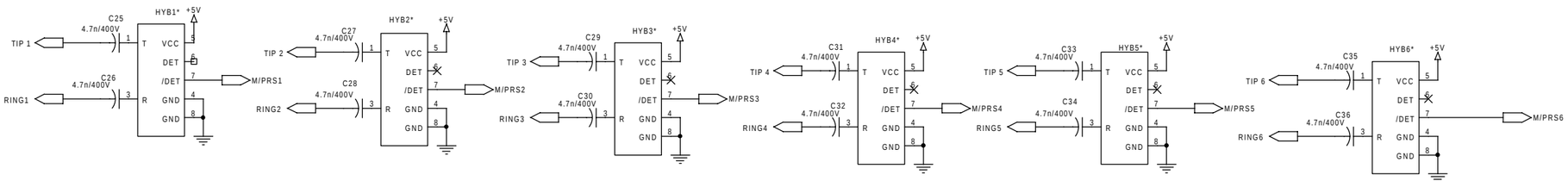












- NOTE -
1. * : NOT ASS'Y

판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II 6TRK

관련도번 REF. NO.		SEC	GADB-000122	1/2

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

HYB7 / HYB8 / HYB9 — KP0051SA

TRK1 TRK2 TRK3 TRK4 TRK5 TRK6

U5 U6 U7 U8 U9 U10 — TP3054/7

GSX VFXI+ VFXI- VFRO TSX BCLKR MCLKR BCLK MCLK DX DR FSX FSR VBB GNDA VCC

C37 1U/50V C38 104 C39 1U/50V C40 104 C41 104 C42 104 C43 1U/50V C44 104 C45 1U/50V C46 104 C47 104 C48 104 C49 1U/50V C50 C51 104 C52 1U/50V C53 104 C54 104

A-LAW U-LAW

R55 1K R56* 1K

DX1 DR1 DX2 DR2

RL1 RL2 RL3 RL4 RL5 RL6 RL7 RL8 — DC-5V

D13-D18 1N4148

Q7-Q12 MMBT5550

R57 10K R58 10K R59 10K R60 10K R61 10K R62 10K

R63 2.2K

U1 U2 STL7053B

FSX3 FSX2 FSX1 FSX0 FSXEXT0 DP3 DP2 DP1 DP0

/HOS3 /HOS2 /HOS1 /HOS0 /RING3 /RING2 /RING1 /RING0 MUTE3 MUTE2 MUTE1 MUTE0 METGND3 METGND2 METGND1 METGND0 /MDSEL

HWXI HWRO HWXO /TSX HWRI FSX CLKX

D7 D6 D5 D4 D3 D2 D1 D0 BA7 BA6 BA5 BA4 BA12 R-/W /CS 1MS /RESET /CLKSEL EXTACT01

GND VCC

HOS4 HOS3 HOS2 HOS1 HOS6 HOS5

M/PRS4 M/PRS3 M/PRS2 M/PRS1 M/PRS6 M/PRS5

R64 R65 R66 R67 R70 R71 — 100

R68 2.2K R69 2.2K

C62 C63 C64 C65 C66 C67 C68 C69 — 104

L7 35uH

C58 10uF/16V C59 104 C60 10uF/16V C61 104

R92 10/0.1W R93 10/0.1W

+5V P1 21,22,46,47 -5V P1 19,44 GND D P1 20,45

+5V P5.11 GND D P5.9,10

R72 100 BFSX P1 15

R73 R74 R75 R76 R77 R78 R79 R80 R81 R82 R83 R84 R85 R86 R87 R88 R89 — 100

BD7 P1 26 BD6 P1 1 BD5 P1 27 BD4 P1 2 BD3 P1 28 BD2 P1 3 BD1 P1 29 BD0 P1 4 BA11 P1 6 BA10 P1 32 BA9 P1 7 BA8 P1 33 BA16 P1 5 /BWR P1 30 /CS P1 12 B1K P1 13 /BRESET P1 38

R90 100K R91 1M C70* C72 103 C71 104

U3A 74HC125 R94 100 HWX2 P1 14

U3B R95 100 HWR2 P1 40

B1 BFD3565 R97 100 U4A 74HC125 R96 100 BCLKX P1 41

R98-R100 2.2K DX2 DR2

U3C U3D 74HC125 U4B U4C U4D 74HC125

C73 104

P1 P2 CON50 CON20

TIP 1 TIP 2 TIP 3 TIP 4 TIP 5 TIP 6 PFTT1 PFTT2 F.GND

RING1 RING2 RING3 RING4 RING5 RING6 PFTR1 PFTR2 F.GND

GND A -5V +5V GND D -55V

NOTE
1. * : NOT ASS'Y
2. CODEC TYPE

LOC.	U-LAW	A-LAW
R55	X	1K
R56	1K	X
U5-U10	TP3054	TP3057

판 (ED) | 일 자 (DATE)							
서 명 (SIGN)							
판 (ED) | 일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)							

승 인		검 도		설 계		제 도	
APP		CH		ENG		DWG	

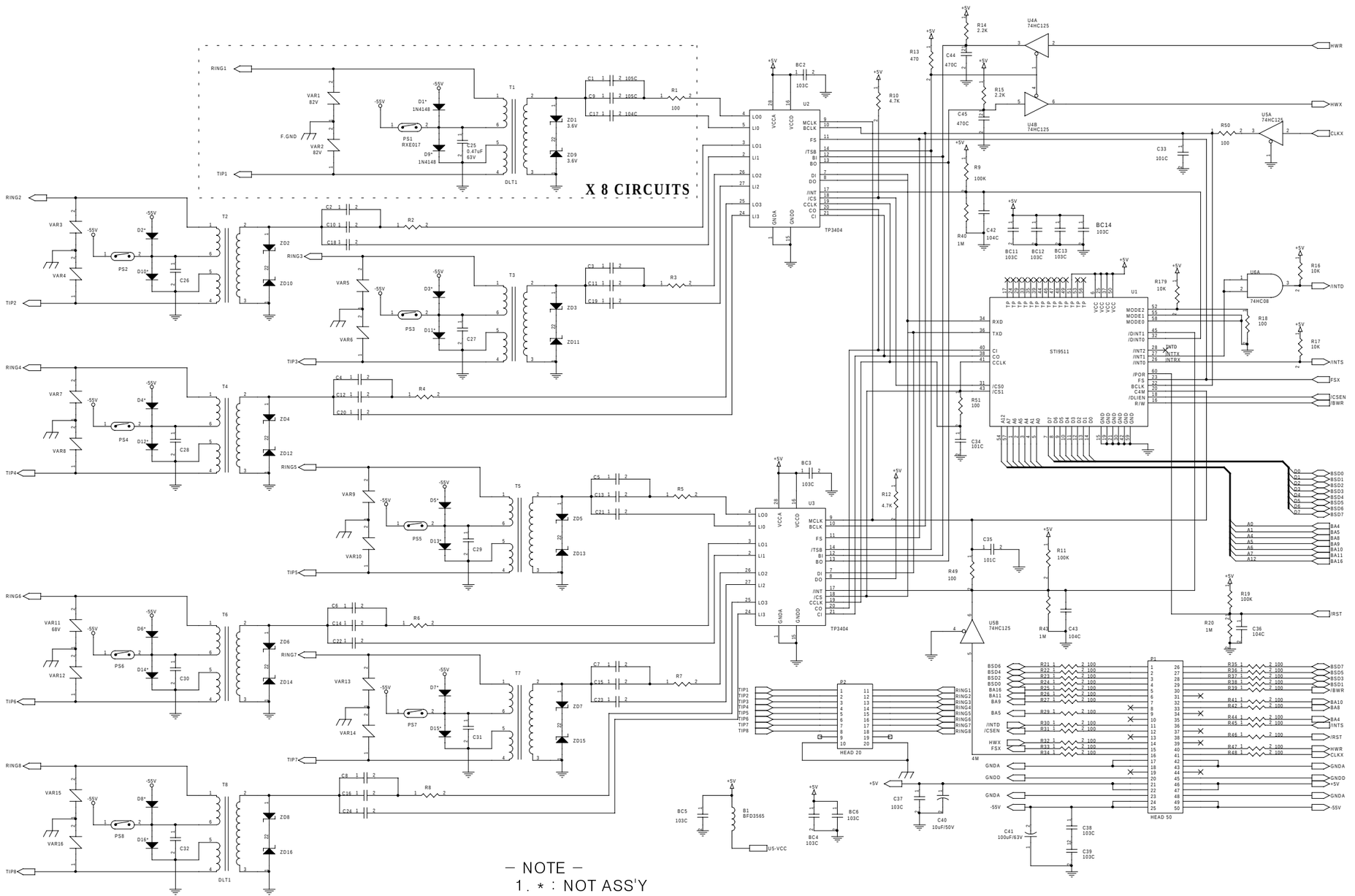
DCS compact II 6TRK

관련도번 REF. NO.

SEC **GADB-000122** 2/2

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



– NOTE –
1. * : NOT ASS'Y

판 (ED)	일자 (DATE)						
성 명 (SIGN)							
판 (ED)	일자 (DATE)	01	1998.06.30				
성 명 (SIGN)							
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II 8DLI

관련 도번 REF. NO.

SEC | GADB-000117 | 1/1

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

X 8 CIRCUITS

판 (ED)	일 자 (DATE)		
서 명 (SIGN)			
판 (ED)	일 자 (DATE)	01	1998.06.30
서 명 (SIGN)			

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

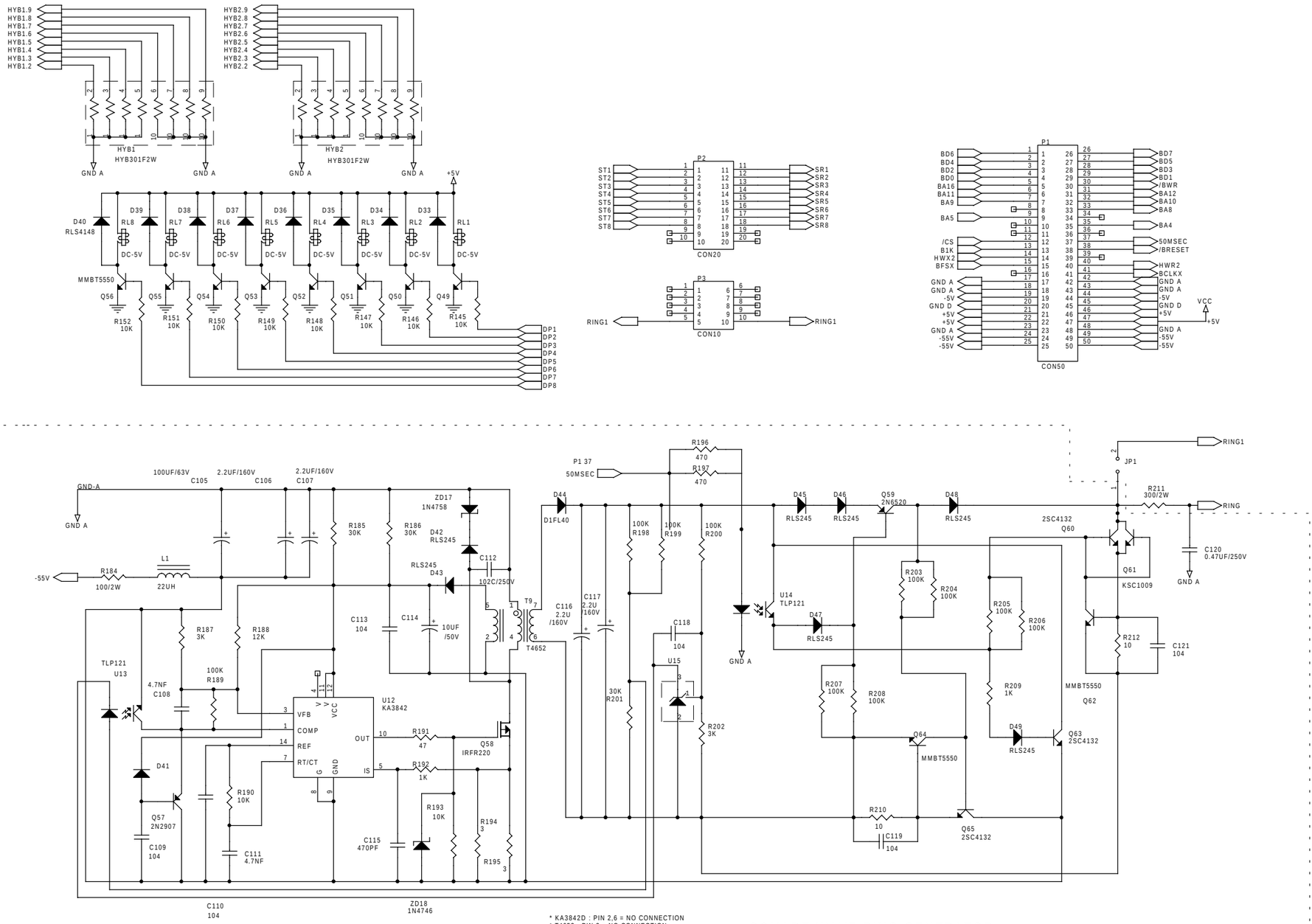
DCS compact II 8SLI

관련도번 REF. NO.

SEC **GADB-000123** 1/3

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

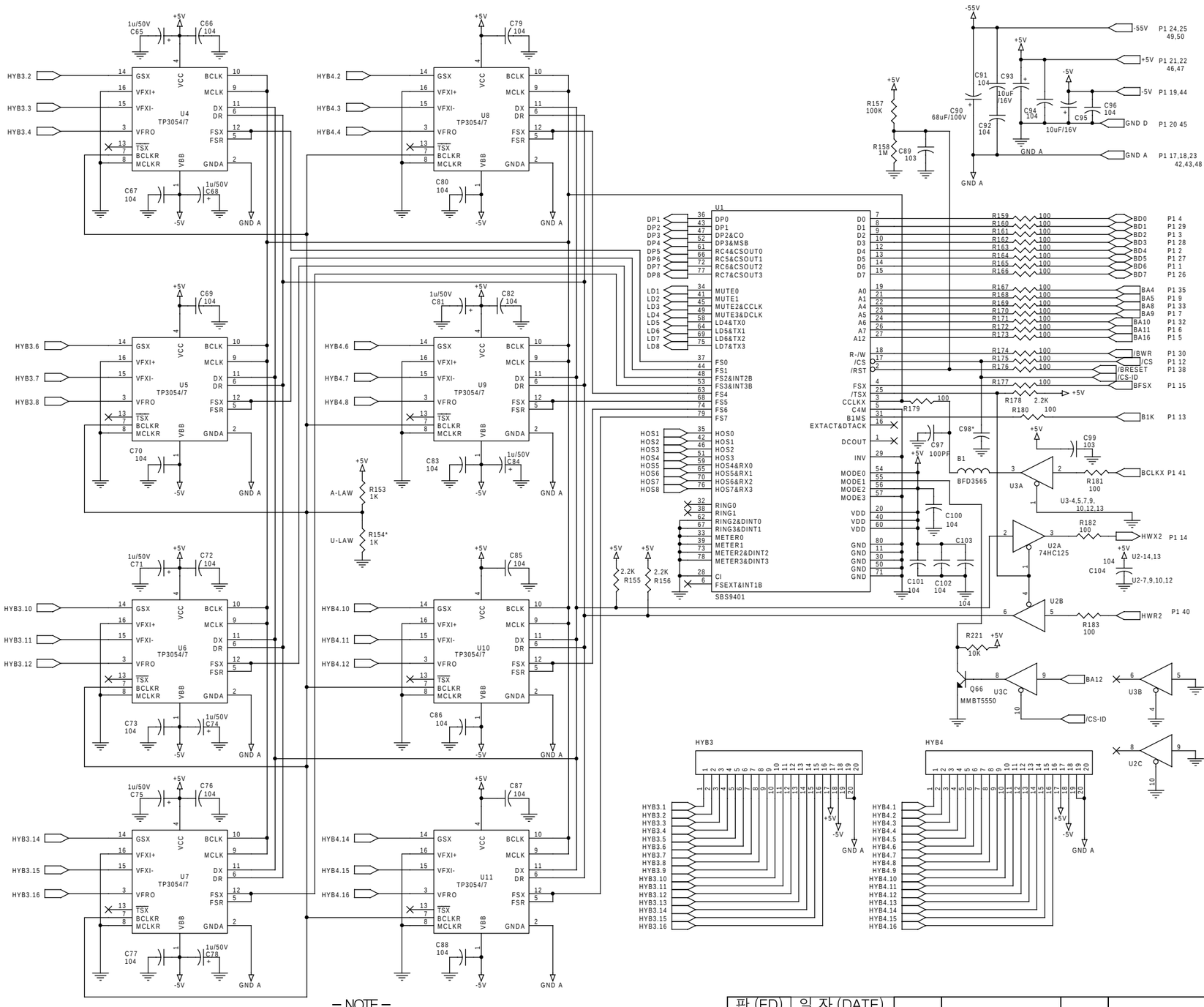
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II 8SLI

관련도번 REF. NO.		SEC	GADB-000123	2/3

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



– NOTE –

1. * : NOT ASS'Y
2. CODEC TYPE

LOC.	U-LAW	A-LAW
R153	X	1K
R154	1K	X
U4-U11	TP3054	TP3057

3. HYBRID TYPE(HYB3,HYB4)
   1) KP0071SA : ITALY
   2) KP0072SA : UK, NEWZELAND
   3) KP0073SA : AUSTRALIA, NORWAY
   4) KP0075SA : HOLLAND, CHILE, ARGENTINA PANAMA, ETC
   5) KP0078SA : KOREA, USA
   6) KP0079SA : BRAZIL

판 (ED) | 일 자 (DATE)							
서 명 (SIGN)							
판 (ED) | 일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)							

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II 8SLI

관련도번 REF. NO.

SEC **GADB-000123** 3/3

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

SERIAL DATA IN/OUT PART

PAGE RELAY PART

ALARM SENSOR PART

M.O.H INTERFACE PART

– NOTE –
1. * : NOT ASS'Y
2. CODEC TYPE

LOC.	U-LAW	A-LAW
R92	X	1K
R93	1K	X
U21	TP3054	TP3057

판 (ED) | 일 자 (DATE)							
서 명 (SIGN)							
판 (ED) | 일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)							
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

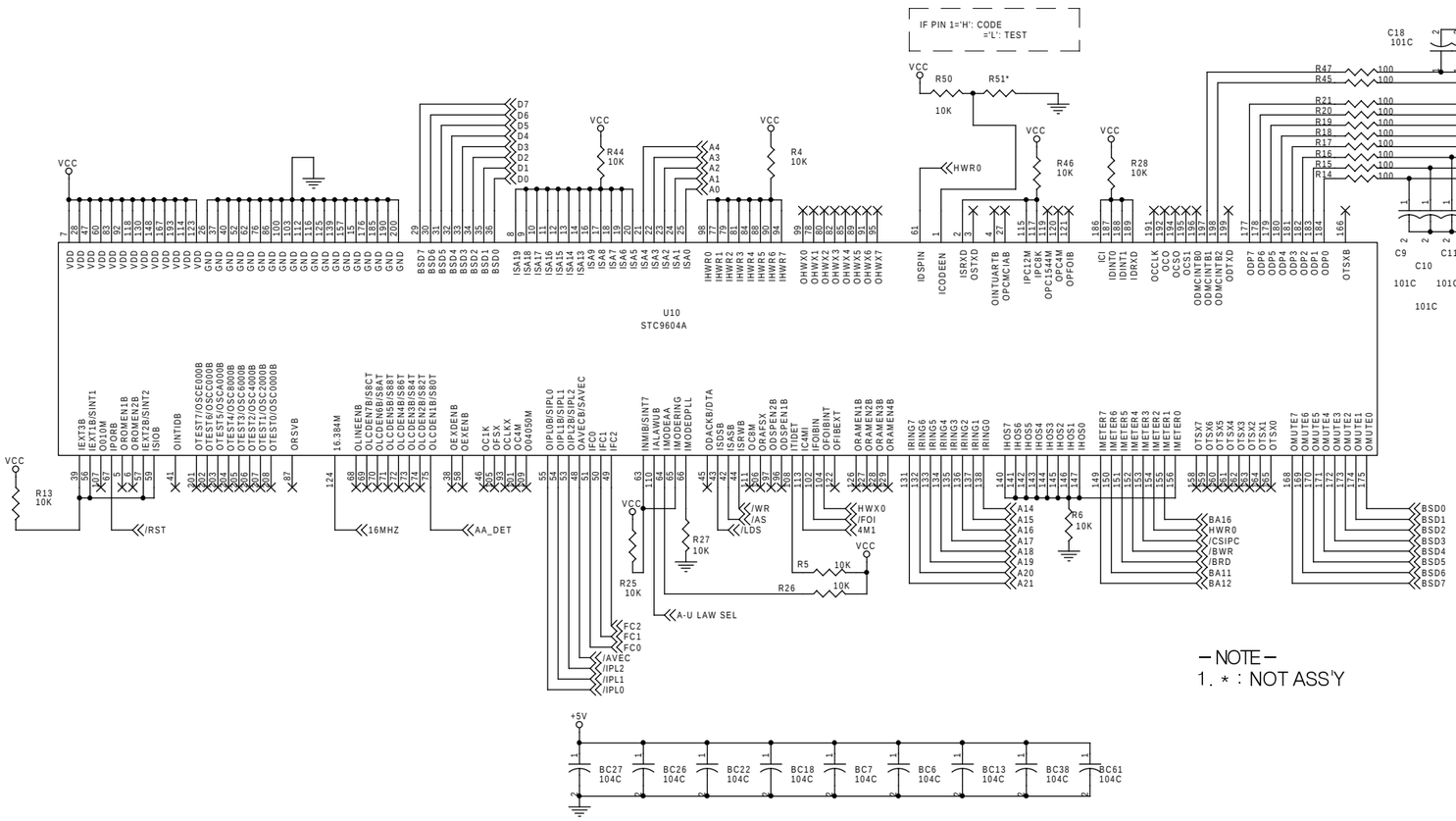
DCS compact II MISC

관련도번 REF. NO.

SEC **GADB-000124** 1/6

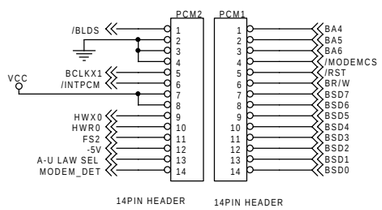
COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



– NOTE –
1. * : NOT ASS'Y

CIRCUIT FOR MISC2



판 (ED) | 일 자 (DATE)							
서 명 (SIGN)							
판 (ED) | 일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)							

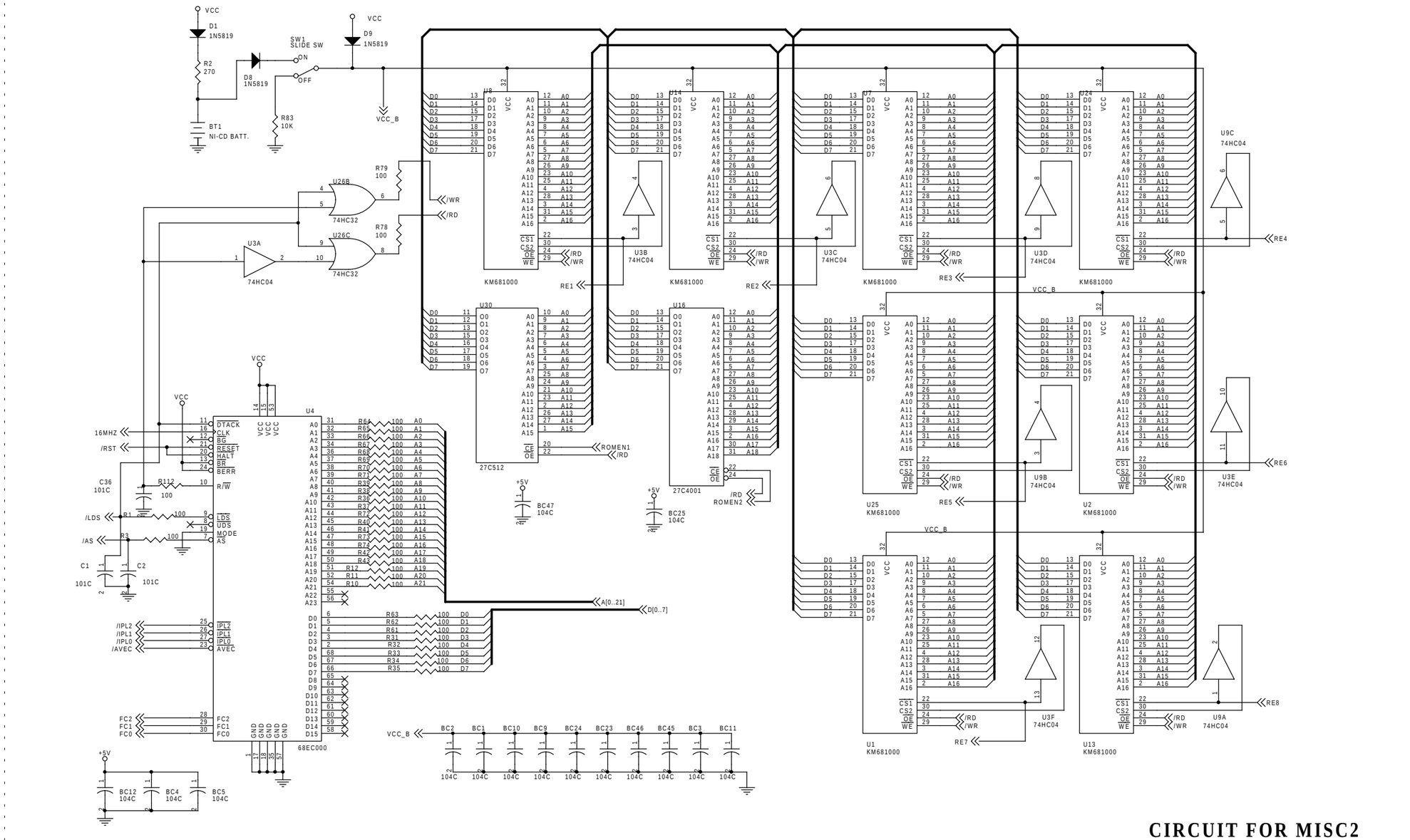
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II MISC

관련도번 REF. NO.		SEC	GADB-000124	2/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

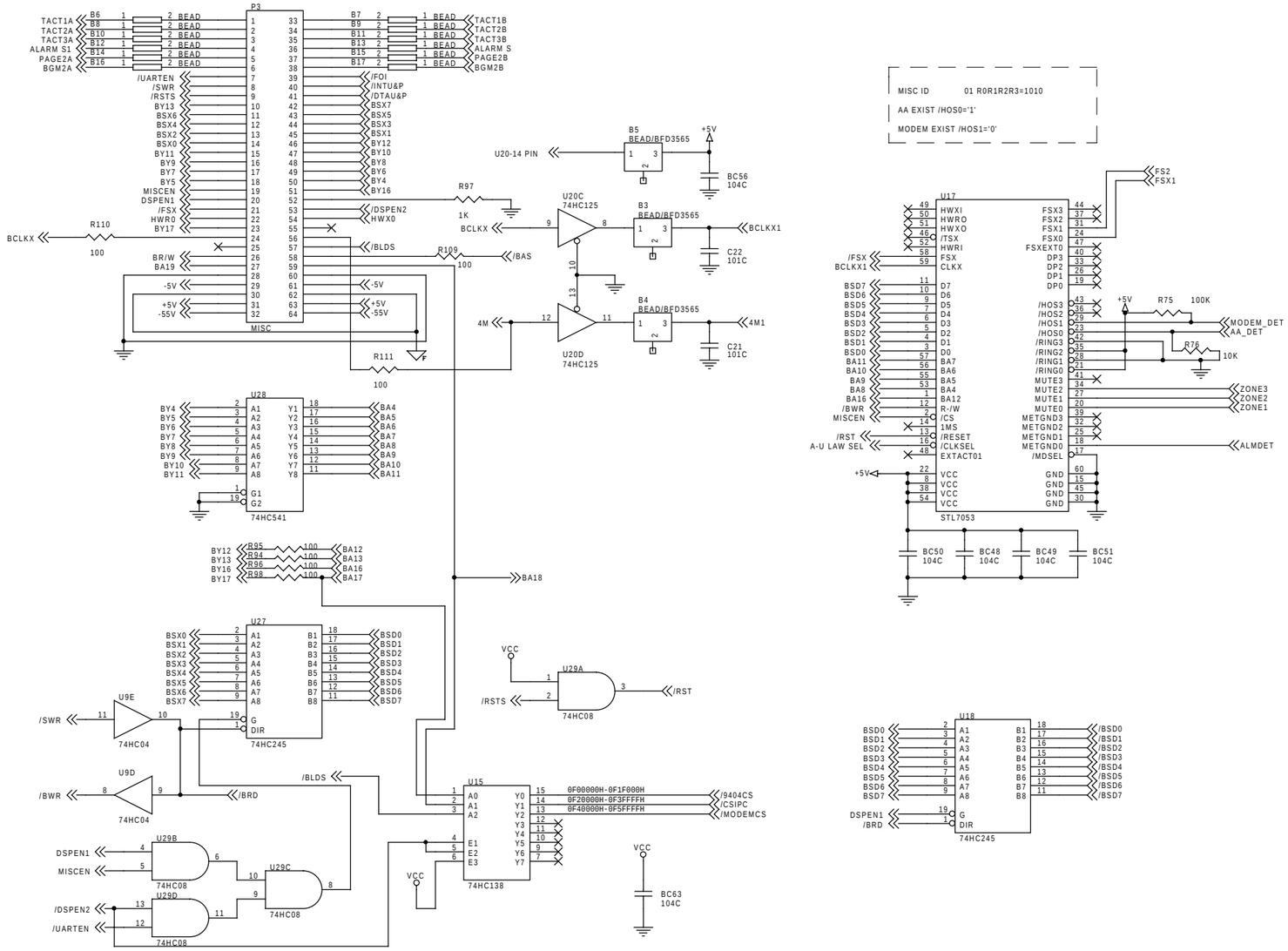
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II MISC

관련도번 REF. NO.		SEC	GADB-000124	3/6

COMPUTER AIDED DESIGN

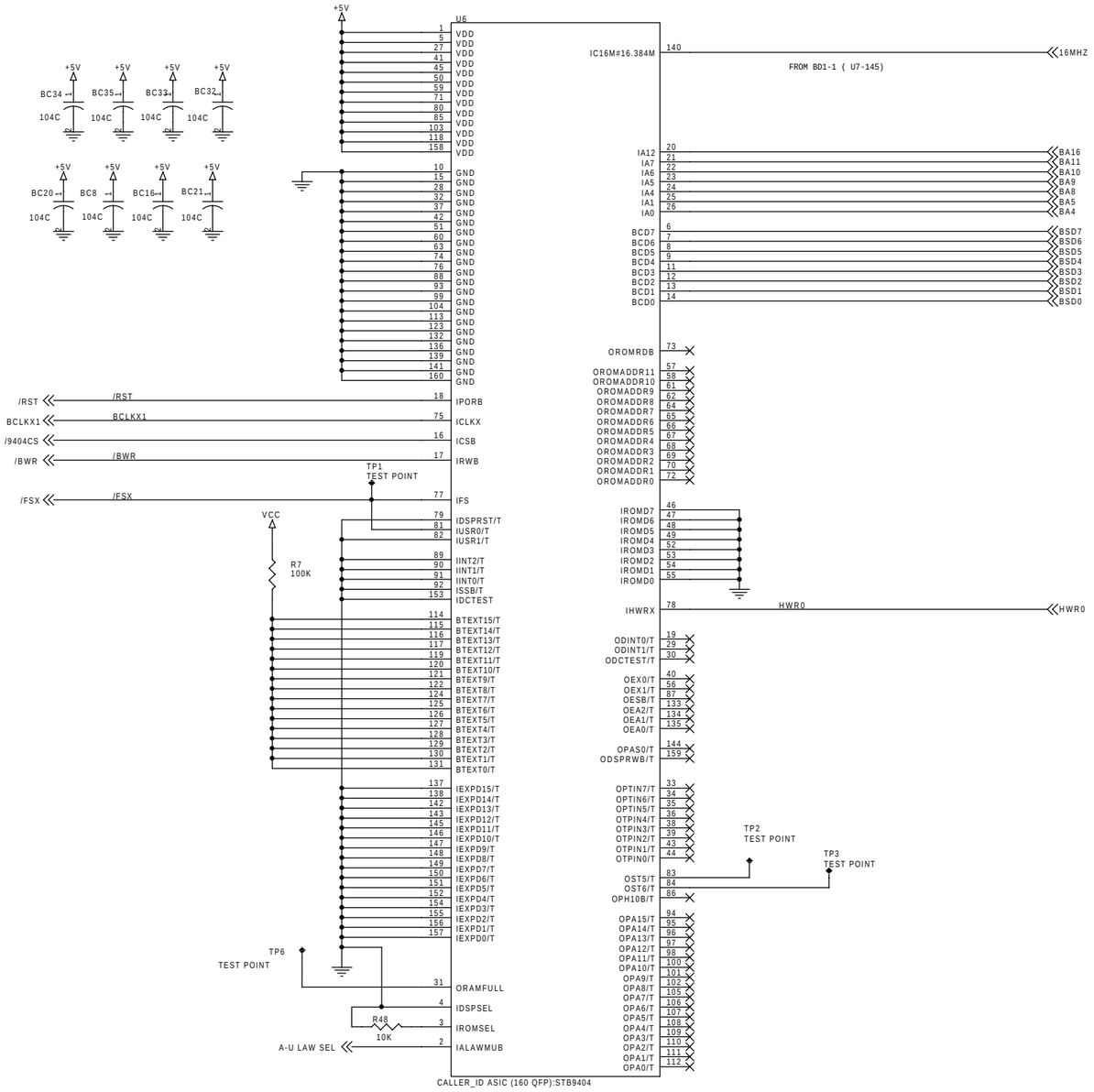
Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)									
서 명 (SIGN)									
판 (ED) | 일 자 (DATE)	01	1998.06.30							
서 명 (SIGN)									
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG		DCS compact II MISC	
관련도번 REF. NO.							SEC	GADB-000124	4/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

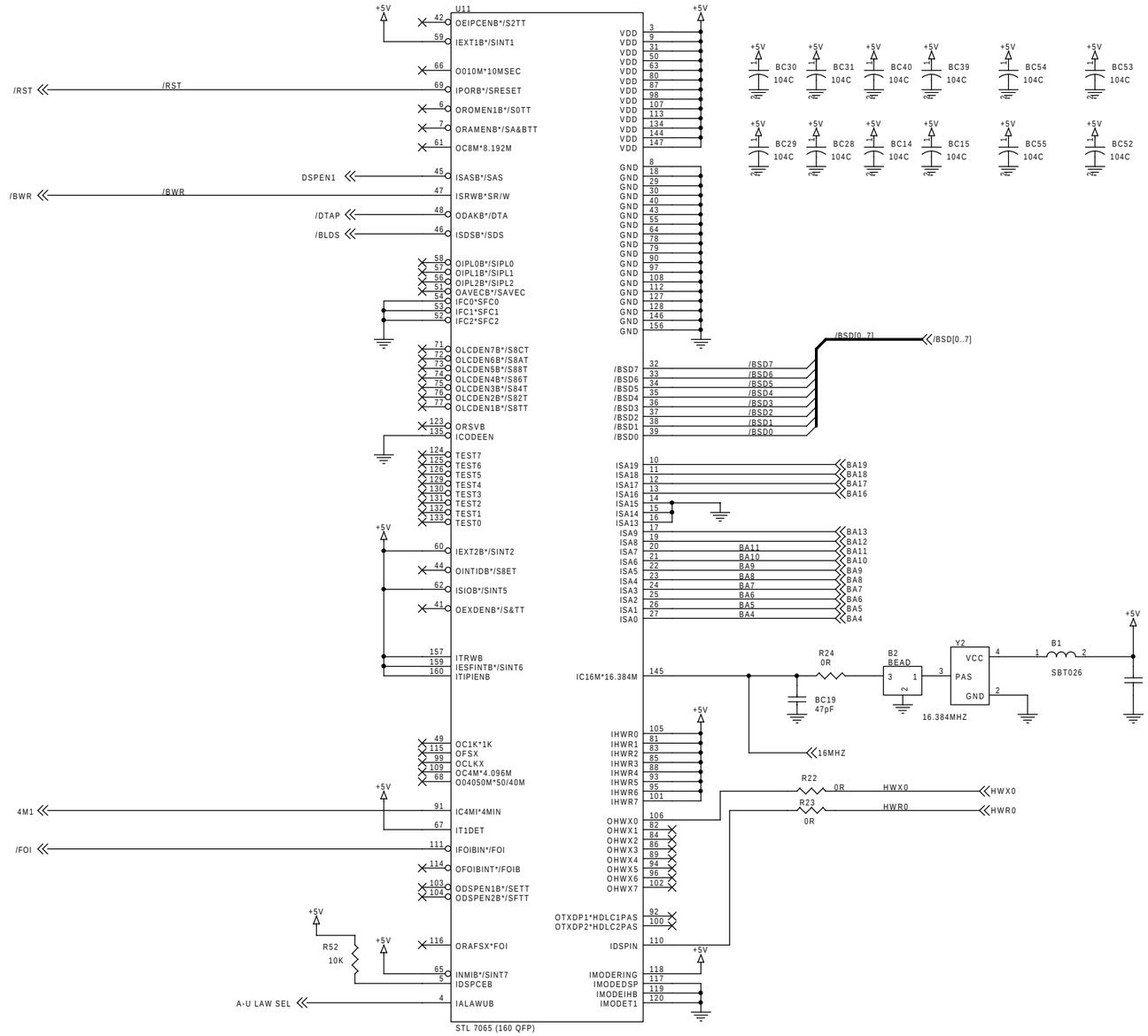


판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG		DCS compact II MISC
관련도번 REF. NO.						SEC	GADB-000124	5/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

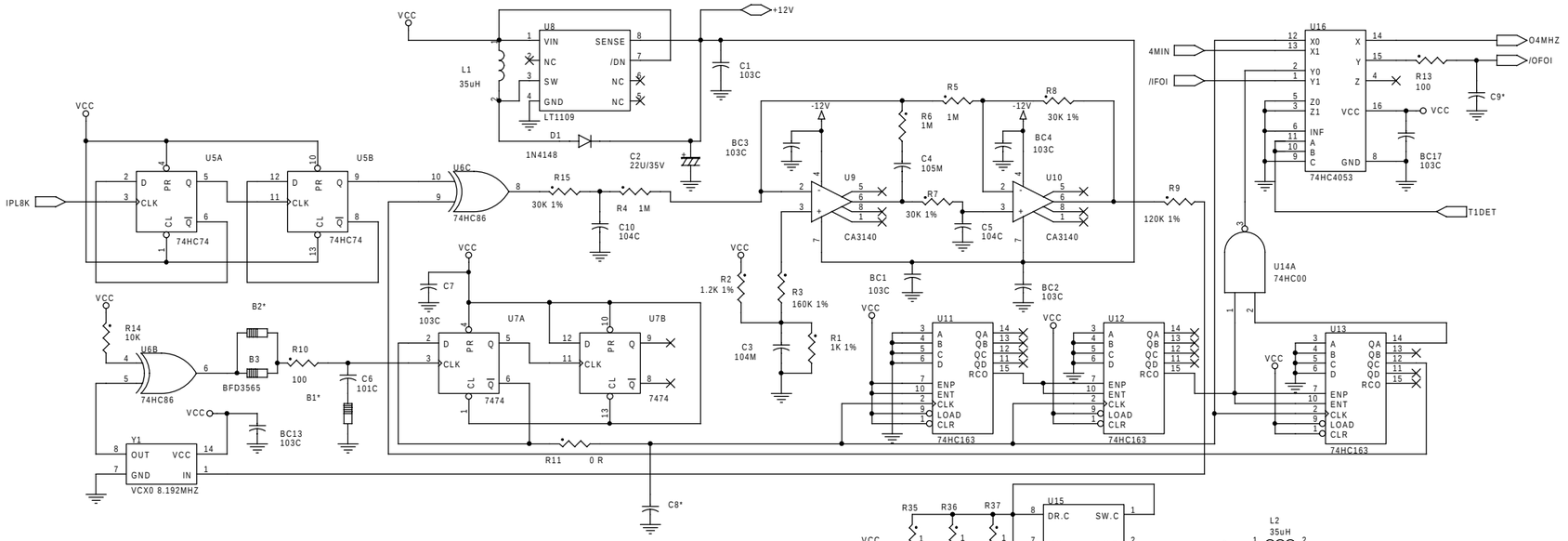
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II MISC

관련도번 REF. NO.		SEC	GADB-000124	6/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



– NOTE –
1. * : NOT ASS'Y

판 (ED)	일 자 (DATE)							
서 명 (SIGN)								
판 (ED)	일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)								

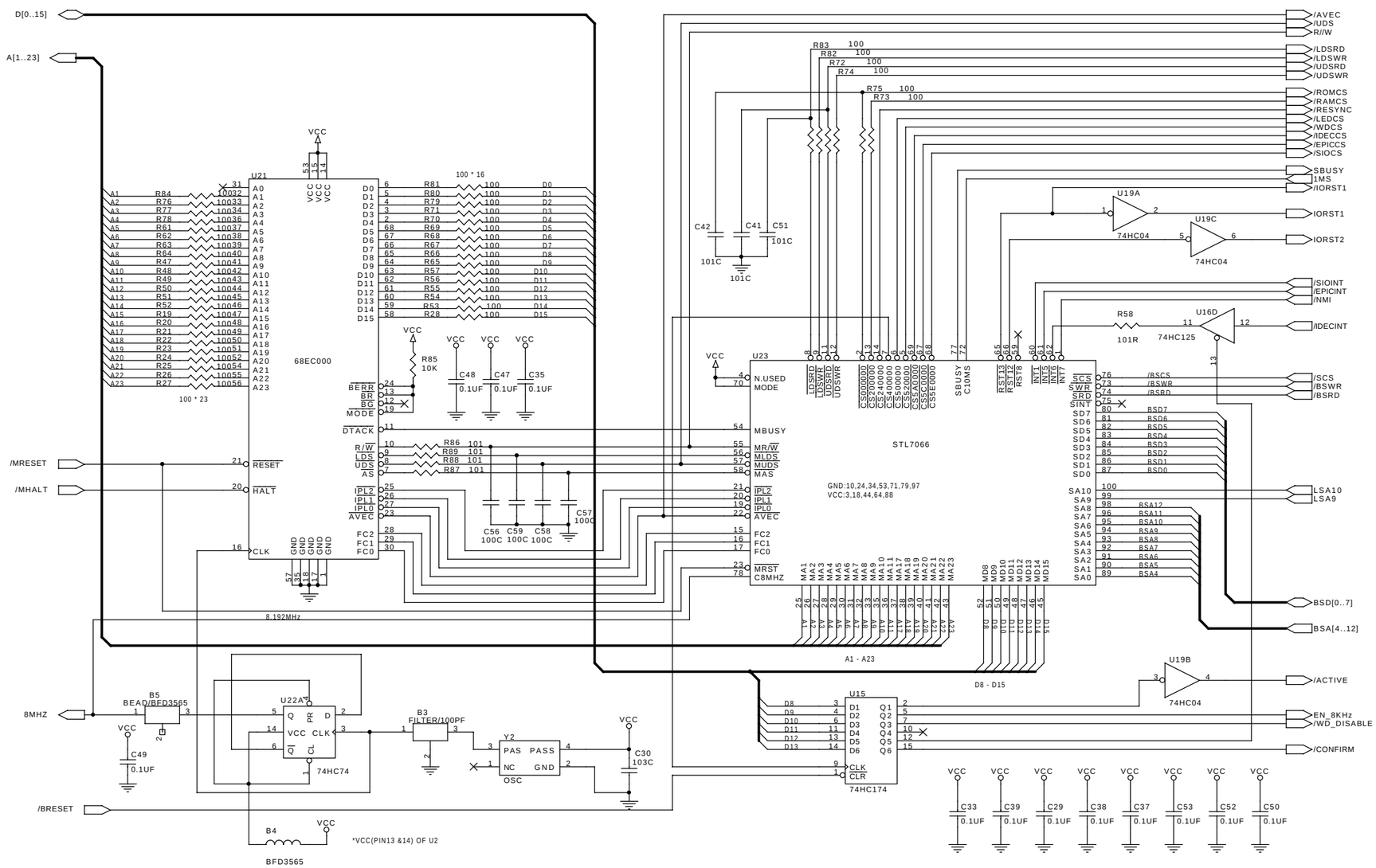
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II PLL

관련도번 REF. NO.		SEC	GADB-000125	1/1

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

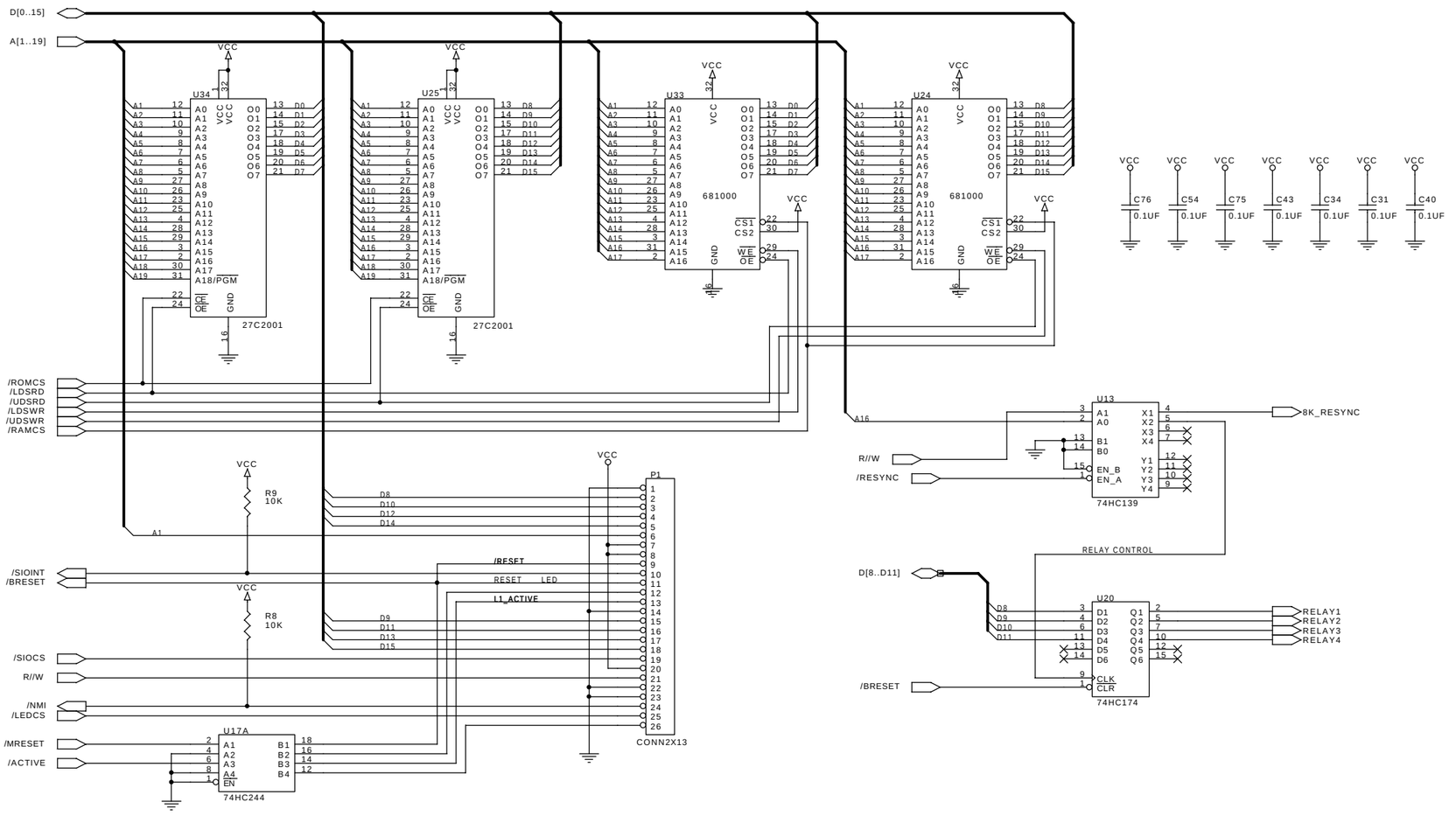
DCS compact II 4BRI(4S0T0)

관련도번 REF. NO.

SEC **GADB-000126** 1/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II 4BRI(4S0T0)

관련도번 REF. NO.		SEC	GADB-000126	2/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

FROM/TO
KEY SYSTEM

판 (ED)	일 자 (DATE)							
서 명 (SIGN)								
판 (ED)	일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

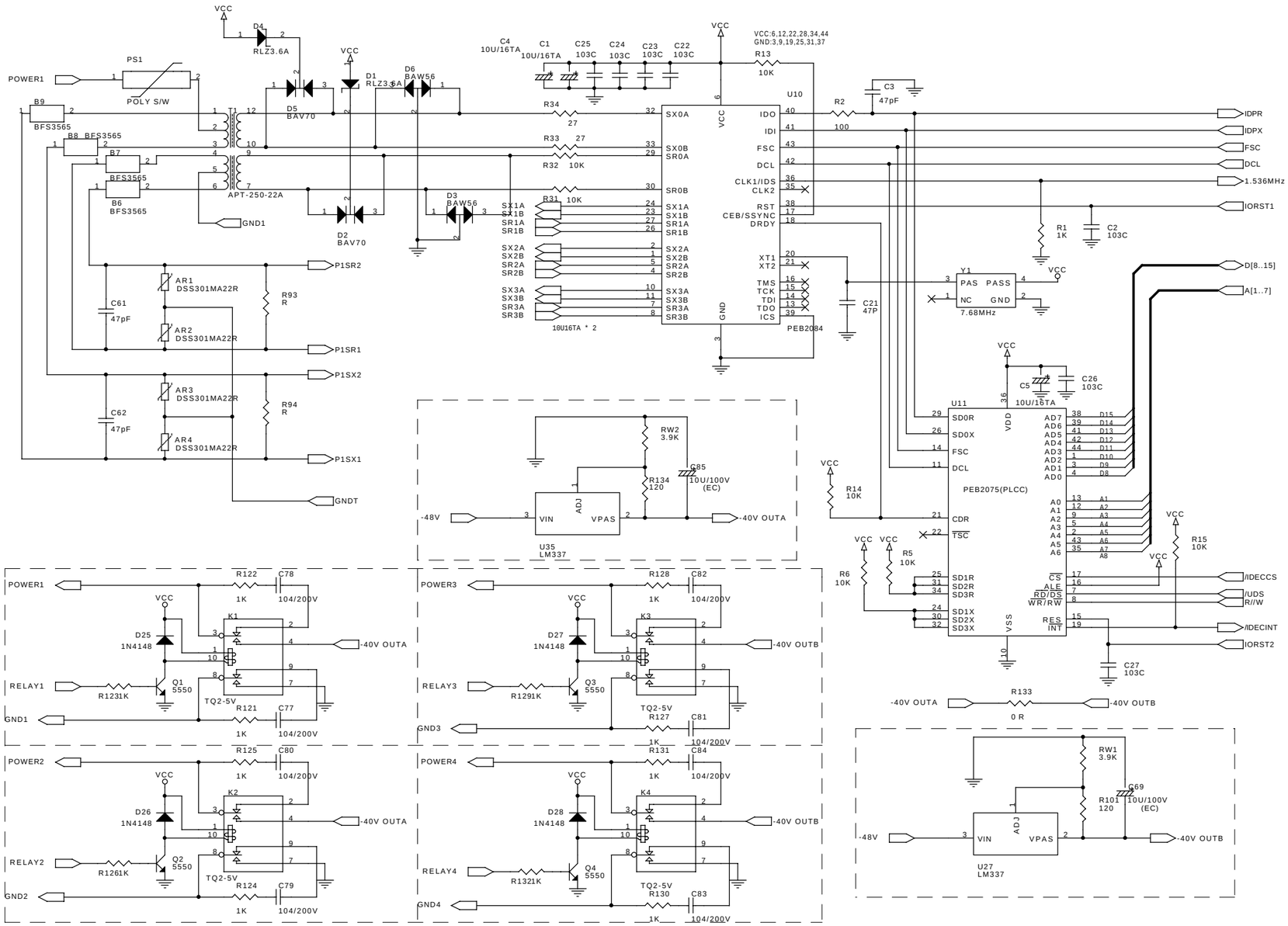
DCS compact II 4BRI(4S0T0)

관련도번 REF. NO.

SEC **GADB-000126** 3/6

COMPUTER AIDED DESIGN

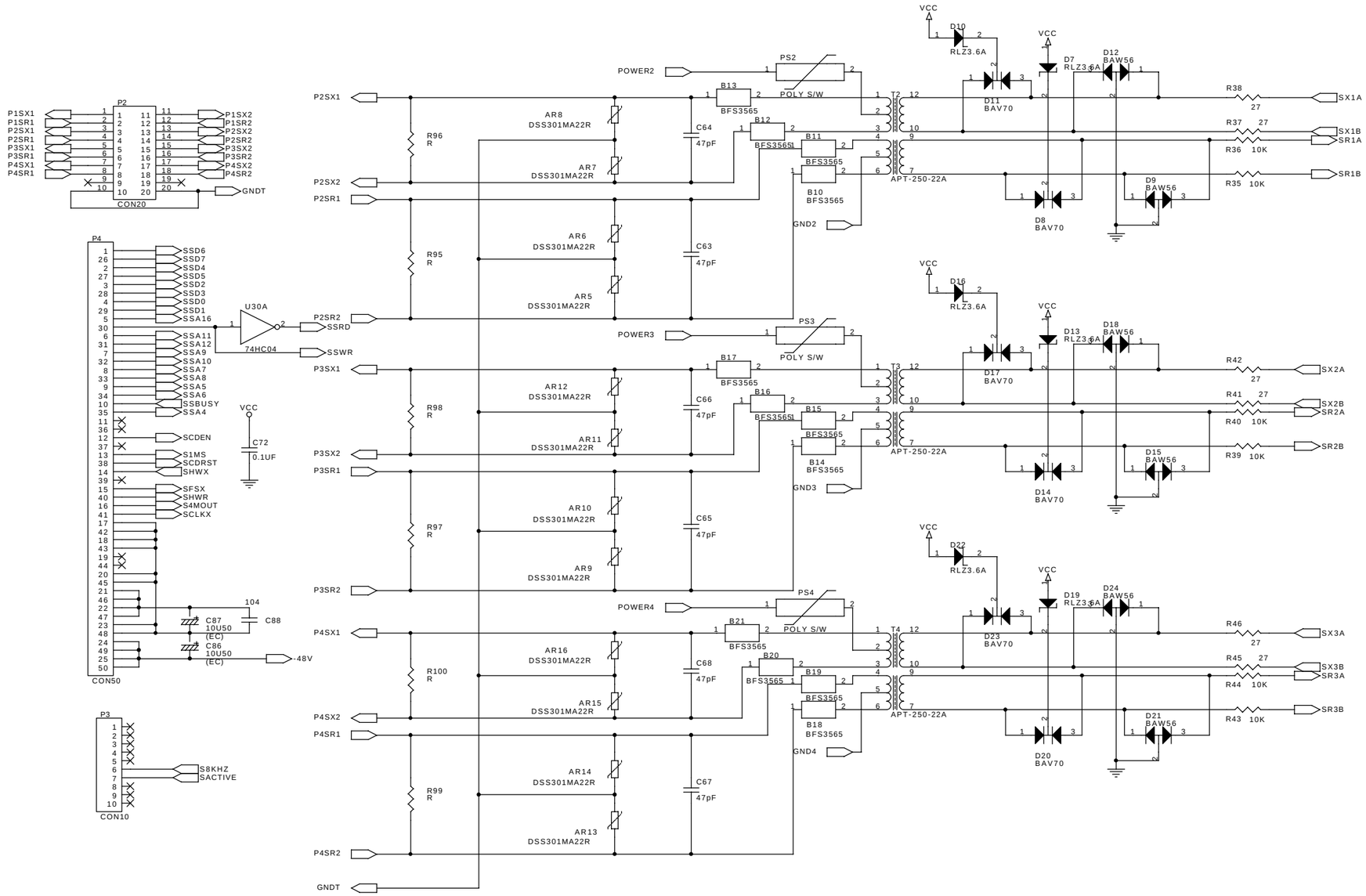
Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG		DCS compact II 4BRI(4S0T0)
관련도번 REF. NO.							SEC	GADB-000126 4/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

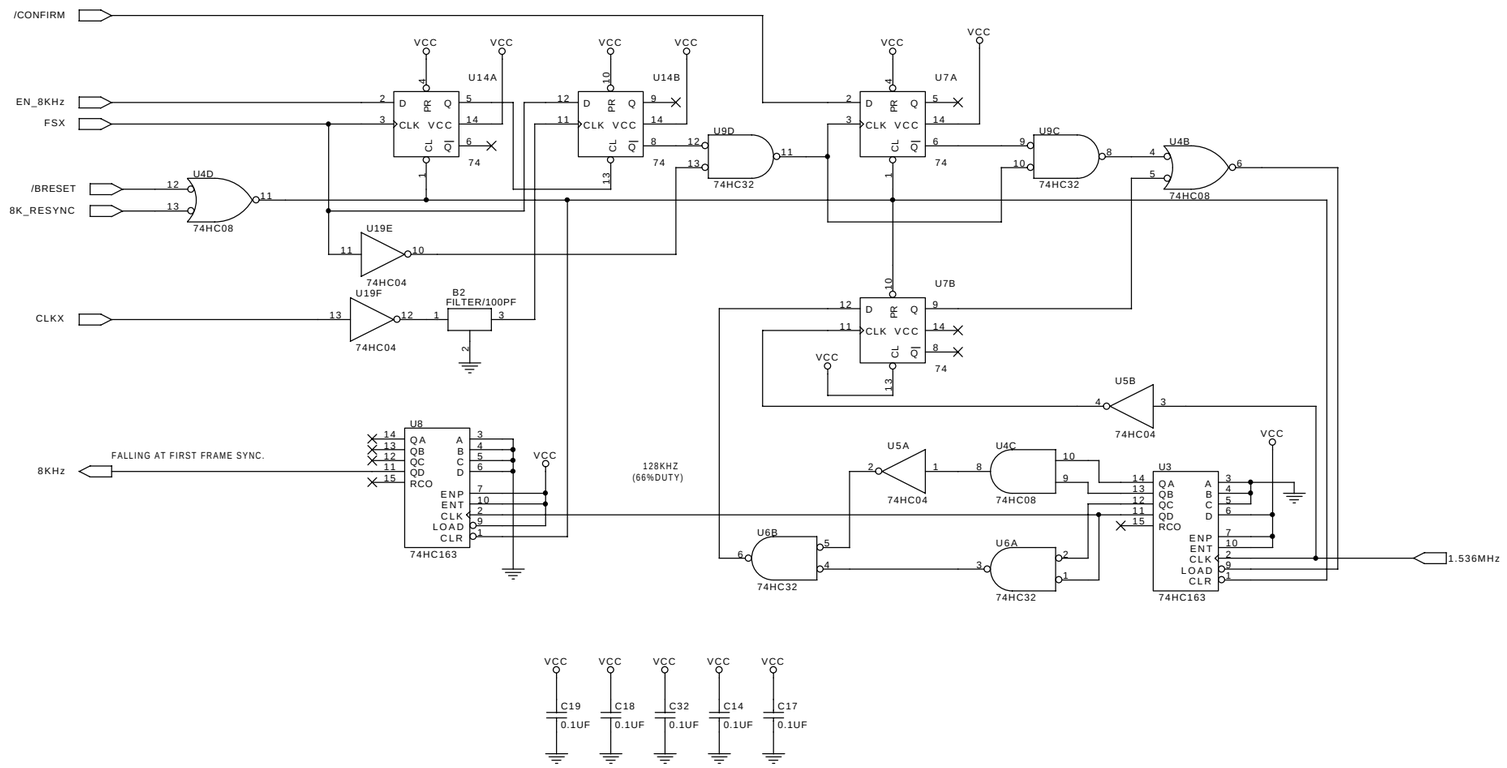
승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II 4BRI(4S0T0)

관련도번 REF. NO.		SEC	GADB-000126	5/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG		DCS compact II 4BRI(4S0T0)	
관련도번 REF. NO.						SEC	GADB-000126		6/6

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

- NOTE -

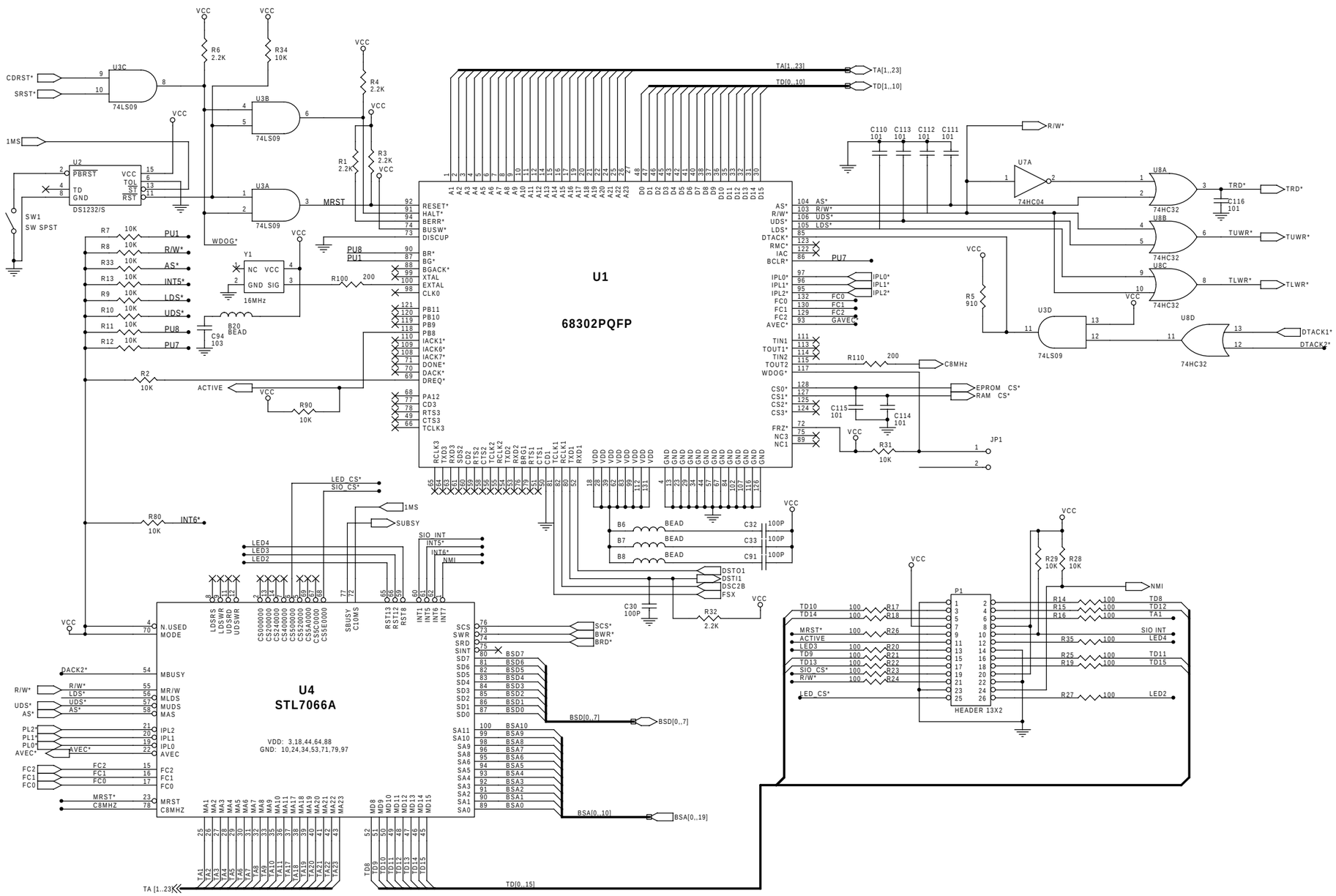
* : NOT ASS'Y

판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1998.06.30						
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG		DCS compact II MODEM
관련도번 REF. NO.						SEC	GADB-000127	1/1

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED) | 일 자 (DATE)								
서 명 (SIGN)								
판 (ED) | 일 자 (DATE)	01	1995.11.21	02	1998.06.29				
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

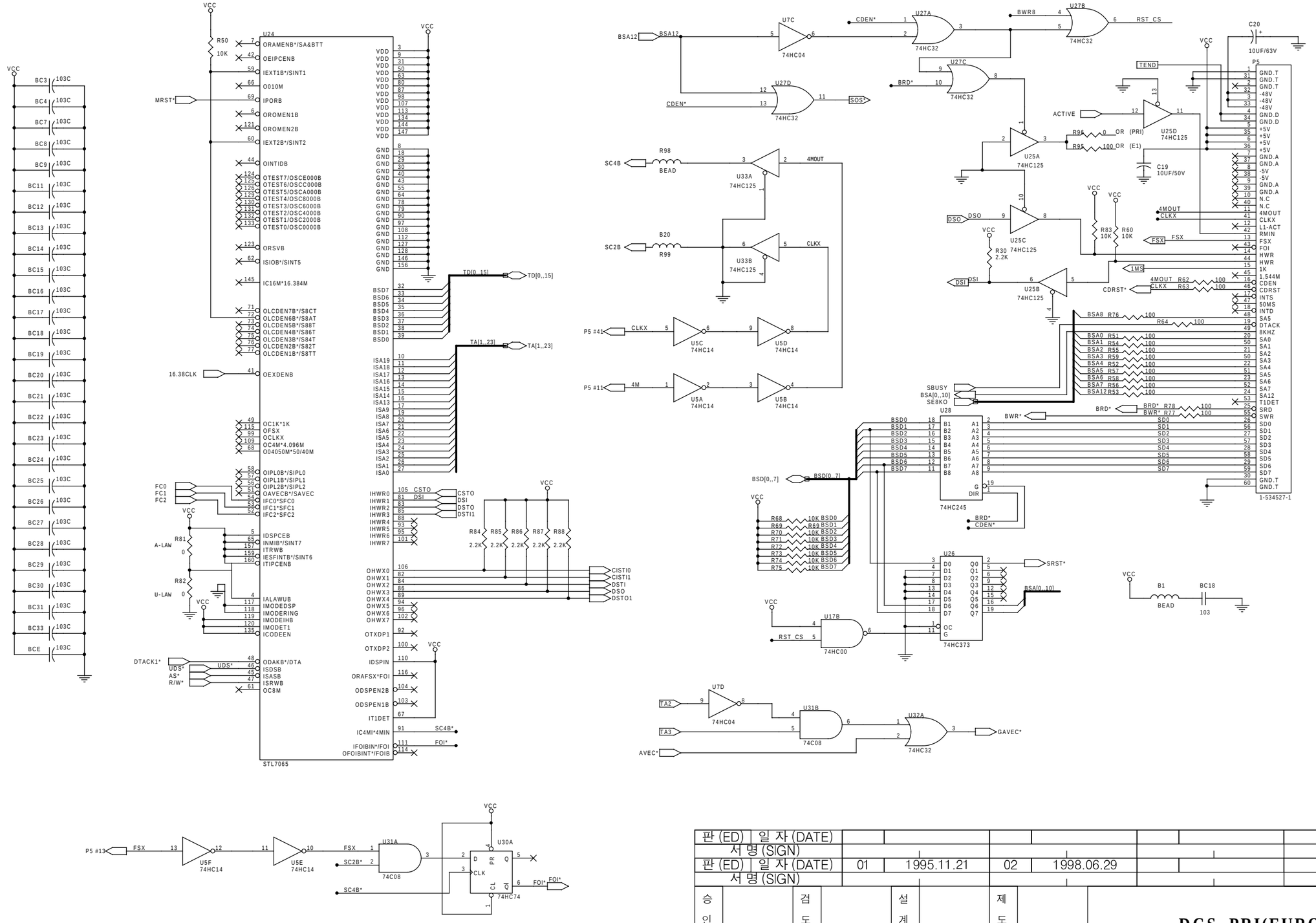
DCS PRI(EUROPE)

관련도번 REF. NO.

SEC **650 240016UBAAEC** 1/3

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED)	일 자 (DATE)							
	서 명 (SIGN)							
판 (ED)	일 자 (DATE)	01	1995.11.21	02	1998.06.29			
	서 명 (SIGN)							

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

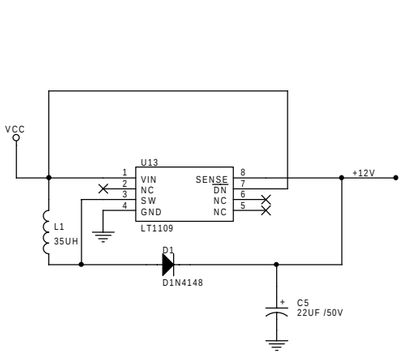
DCS PRI(EUROPE)

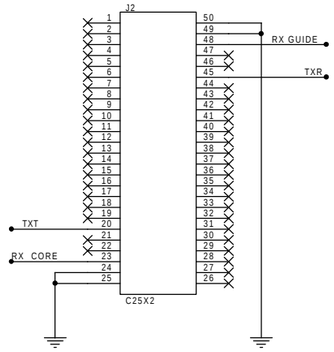
관련도번 REF. NO.

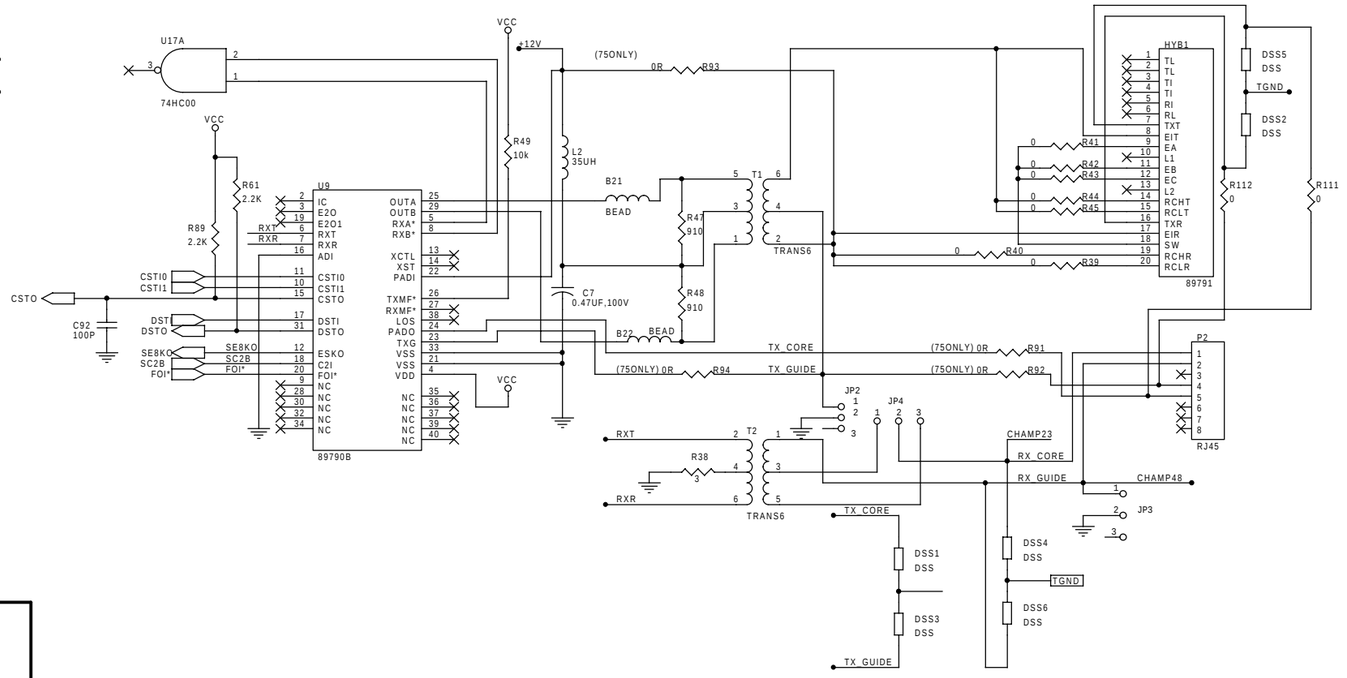
SEC **650 240016UBAAEC** 2/3

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

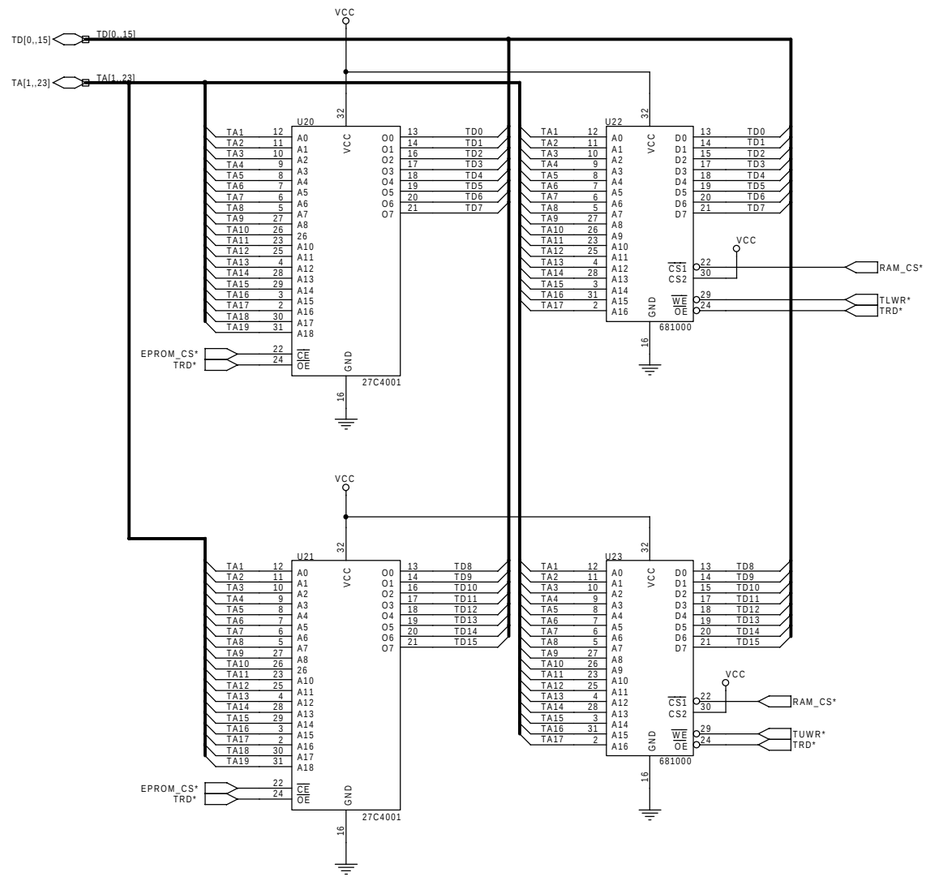


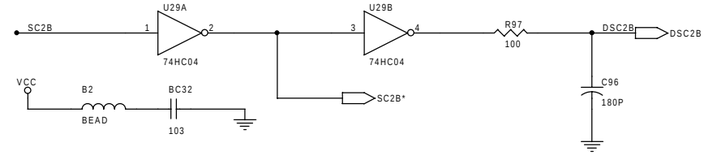


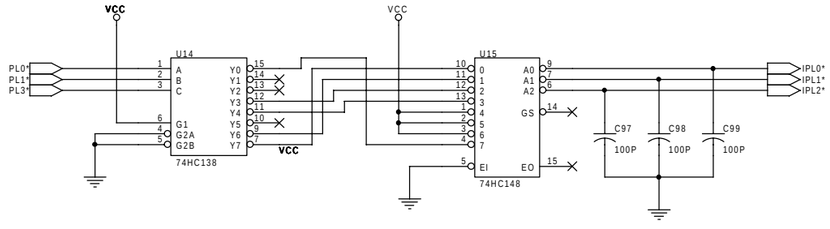


256K X 16

128K X 16







판 (ED) | 일 자 (DATE)							
서 명 (SIGN)							
판 (ED) | 일 자 (DATE)	01	1995.11.21	02	1998.06.29			
서 명 (SIGN)							

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

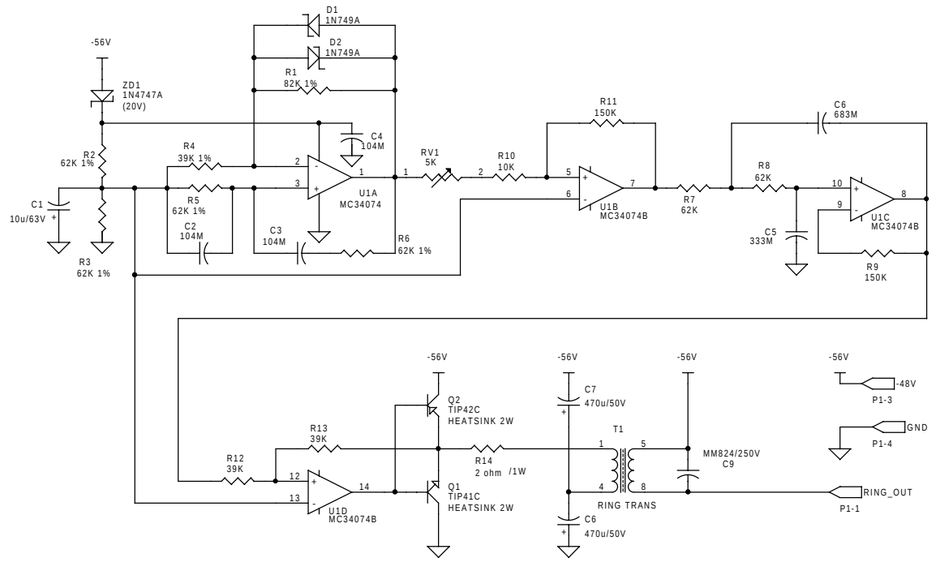
관련도번 REF. NO.

DCS PRI(EUROPE)

SEC **650 240016UBAAEC** 3/3

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED)	일 자 (DATE)							
서 명 (SIGN)								
판 (ED)	일 자 (DATE)	01	1995.06.07	02	1995.11.14	03	1998.06.30	
서 명 (SIGN)								

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

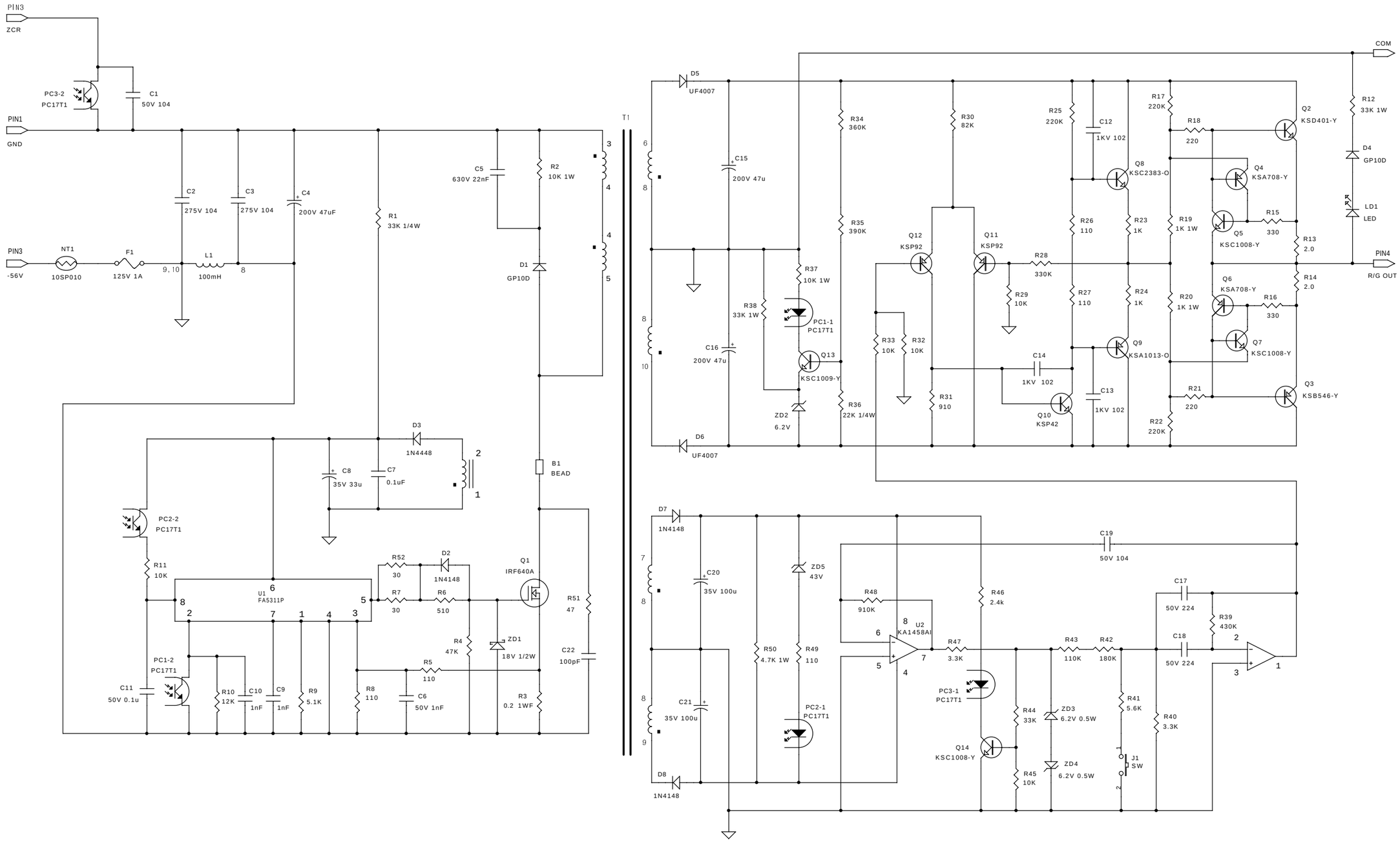
RINGER1(SIGN WAVE, 3W)

관련도번 REF. NO.

SEC **650 240022SAAAEC** 1/1

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.



판 (ED)	일 자 (DATE)						
서 명 (SIGN)							
판 (ED)	일 자 (DATE)	01	1998.06.30				
서 명 (SIGN)							

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II RINGER2

관련도번 REF. NO.		SEC	RGPS	1/1

COMPUTER AIDED DESIGN

Samsung Electronics Co., Ltd
All rights reserved
당사의 사전 서면 동의없이 전재 및 복사를 금함.

INPUT
AC220-240V
50-60Hz

HOT
FG
NEU
INLET
PLUG AC MALE
SW1 DPDT
SW1 DPDT
F1 50T032H
F2 50T032H
TNR1 12G241
TNR2 12G241
DSA1 302
C1 224
R1 564 1/2W
LF1 UL40060
C3 222
C4 222
LF2 UL40060
C2 224
NT1 12D15
BD1 RBV606
C6 220uF 400V
C7 220uF OPEN
+Vin
-Vin
LUG2
C5 472
B3 BEAD

– NOTE –

1. CON1 Pin Assignment
   BATTERY OUTPUT
   Pin 1 : +Vo
   Pin 2 : -Vo
2. CON2 Pin Assignment
   Pin 1 : +5V,2.5A
   Pin 2 : -55V,1.2A
   Pin 3 : GND
   Pin 4 : F/G

+Vin
-Vin
R16 OPEN
R17 OPEN
R2 224 1W
R3 224 1W
C8 333 630V
R4 104 2W
B1 BEAD
C9 OPEN
D1 UF4007
B2 BEAD
NC
Q1 SSH5N90
1N4148 D2
R8 220 1W
C10 221 1KV
R9 471 1W
ZD1 20V
R7 473
R10 201
R5 0.2 1W
R6 0.2 1W
R11 101
C11 103
IC1
KA7552/FA5311P
OUT Vcc Is FB GND RT CT CS
PC1 PC123
R12 123
R13 562
C12 471
C13 104
R14 123
PC2 PC123
C14 33u 35V
D3 D1NL20U
R15 220 1W
C16 332
C17 332

T1
CKT-2B
LED1 GREEN AC
R23 102 1/4W
PC1 PC123FY
C25 104
Q11 C1009
ZD4 6.2V
R22 203 1/4W
R21 622 1W
C24 10uF
C22 470uF
C23 470uF
D11 D5LC40U
C21 102
D12 UF4007
R24 473
R25 133
R26 133
L1
R27 101
PC2 PC123FY
ZD12 1N5265B
C26 470uF
Q12 C1009
R30 2R2 1W
R31 2R2 1W
D13 UF5402
R29 101
ZD13 18V
Q13 IRF620
R28 473
R32 622 1W
R34 124
U1 5237L
ZD14 18V
Q14 IRF640
VR1 501
R35 102
R33 473
D14 UF5402
CON1 5096-03
F3 50T020H
F4 50T020H

T2
CKDC
R36 104
R37 103
R38 561 1/4W
C29 473
D16 1N4148
ZD15 6.2V
PC3 PC17T1
R39 103
Q15 C1009
R40 151
C28 223
Q16 IRF620
R41 0.27 1W
C27 47uF
L2
CHOKE COIL
R42 47
C34 222 1kV
D17 SR504
C30 2200uF
LED2 GREEN DC
U2 TL431
C31 104
VR2 501
R43 391
R45 561
R44 562
R46 562
ZD16 6.2V
C32 2200uF
C33 474
L3
CHOKE COIL
C15 222
JP JUMPER
LUG1
CON2 YH396-04V

판 (ED) | 일 자 (DATE)							
서 명 (SIGN)							
판 (ED) | 일 자 (DATE)	01	1998.06.30					
서 명 (SIGN)							

승 인 APP		검 도 CH		설 계 ENG		제 도 DWG	

DCS compact II POWER SUPPLY

관련도번 REF. NO.		SEC	CKPS-V2B	1/1

COMPUTER AIDED DESIGN